CAMBRIDGE SYSTEMATICS

Bay Area/California High-Speed Rail Ridership and Revenue Forecasting Study

Ridership and Revenue Forecasts

final

report

prepared for

Metropolitan Transportation Commission and the California High-Speed Rail Authority

prepared by

Cambridge Systematics, Inc.

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Table of Contents

List of Tables

List of Figures

1.0 Introduction

1.1 Contents of This Report

The purpose of this report is to document and analyze 2030 high-speed rail ridership for the set of alignment and network alternatives compared in the *Draft Bay Area to Central Valley High Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement* (DEIR/S) published in July 2007. Section 2.0 of this report analyzes for the overall HST system and specific travel markets served by high-speed rail in terms of geography, original travel mode, and trip purpose using a base Altamont and Pacheco alignments. Section 3.0 describes results from several sensitivity tests that were conducted to examine the effects of different level of service and cost assumptions. Sections 4.0 through 7.0 provide an overview of the results from all the network and alignment alternatives. Detailed output from the 37 modeled alternatives is provided in tabular form in Appendix A.

1.2 Related Reports

There are a number of documents that support the work presented in this report. Operating assumptions for all auto, conventional rail, air, and high-speed rail are detailed in *Bay Area/California High-Speed Rail Ridership and Revenue Forecasting Study Levels of Service Assumptions and Forecast Alternatives.* Detailed information on the network and alignment alternatives for HST can be found in Section 7 of the DEIR/S.

1.3 Definitions

Most of the graphs and tables in this report distinguish between "interregional" and "intraregional" travel, with interregional trips also being divided into "short" and "long" travel:

- An *interregional trip* is one that begins in one region and ends in another.
- An i*ntraregional trip* is one that begins in the same region that it ends. Intraregional HST trips only occurs in regions with more than on HST station (SCAG, SANDAG, and MTC), but the California Statewide Travel Model for High-Speed Rail included intraregional auto travel in all regions.
- An interregional *short* trip is one that is less than 100 miles from origin to destination as defined by the auto distance.
- An interregional *long* trip is greater than or equal to 100 miles.

California was divided into 14 regions for purposes of California Statewide Travel Model for High-Speed Rail development and application. These 14 regions, which are displayed in Figure 1.1, are: Association of Monterey Bay Area Governments (AMBAG), Central Coast, Far North, Fresno and Madera Counties, Kern County, South San Joaquin Valley, Merced County, Sacramento Area Council of Governments (SACOG), San Diego Association of Governments (SANDAG), San Joaquin County, Stanislaus County, Western Sierra Nevada, Metropolitan Transportation Commission (MTC), and Southern California Association of Governments (SCAG).

Figure 1.1 Regional Groupings in California Statewide Travel Model

2.0 Baseline Ridership Forecasts

This section discusses characteristics of year 2030 HST ridership in terms of geographic markets, trip purposes, and modes from which HST riders are diverted. It also compares the sources of ridership versus revenue and station level boardings using base alternatives for Altamont and Pacheco Pass alignments (A1 and P2).

Both alternatives have Southern California termini in San Diego and Irvine, with identical HST alignments and station locations from Fresno southward. Both alternatives also have Northern California termini in Sacramento and San Francisco, with service also provided to San Jose. Within Northern California, common HST station locations were modeled in Merced, Modesto, Stockton, Sacramento, San Francisco, Millbrae, Redwood City, and San Jose. The basic HST operating plan in terms of overall service levels is identical.

Key differences between A1 and P1 exist with some station locations, the fare structure, and the operating plan for the Bay Area termini. In addition to the station locations mentioned above, the Altamont (A1) Alternative has HST stations in Warm Springs, Bernal/I-680, Modesto (Downtown), and Tracy, while Pacheco (P1) has stations in Gilroy, Modesto (Briggsmore), and Morgan Hill. While the distance-based fare policy is identical for both alternatives, alignment differences lead to slight fare differences in many station pair. Finally, the Altamont Alternative (A1) has dual termini in San Francisco and San Jose, with HST service from Sacramento and Southern California split to these two Bay Area termini. Since the Pacheco Alternative (P1) serves all Bay Area stations on a single alignment, there is no HST service split within the Bay Area. Ridership forecasts for the two base alternatives (A1 and P1) and several sensitivity tests were prepared for both 2000 and 2030 time periods. Ridership forecasts were also prepared for other Altamont and Pacheco alternatives for the 2030 time period.

2.1 Summary Results for Base Alternatives

The annual boardings forecast for the Altamont and Pacheco baseline HST alternatives are presented in Table 2.1. Overall the Pacheco alternative (P1) has higher projected ridership with over 93 million expected annual boardings compared to 87.9 million for the Altamont alternative (A1). The preference of the P1 alternative is most pronounced in the Bay Area and Southern California due to quicker travel times between these two regions. The Altamont alternative suffers from the division of service between San Jose and San Francisco termini once trains enter the Bay Area. The split effectively doubles the average train headways into and out of the Bay Area for individual stations resulting in decreased ridership. The Altamont Alternative produces more boardings in the

Sacramento and Stockton area due to shorter travel time to the Bay Area compared to the Pacheco Alternative.

The P1 and A1 alternatives have similar forecasts for annual intraregional boardings (roughly 23 million). Intraregional boardings for the Altamont alternative are slightly higher since this alternative provides direct service in two major travel markets (Bernal/I-680 to/from San Jose; Bernal/I-680 to/from San Francisco and the Peninsula) in which HST is substantially faster than other transit options. The Pacheco alternative has a similar magnitude of intraregional boardings, but instead operates as a complementary express service to Caltrain between Gilroy and San Francisco while taking advantage of Caltrain's more extensive network of stations.

Results for 35 additional alternatives are presented in Sections 4.0 through 6.0 of this report.

Table 2.1 Annual Ridership Summary – Base Alternatives

Annual Ridership for Base Alternatives		
	Pacheco Base (P1)	**Altamont Base (A1)**
Bay Area	22,375,000	19,115,000
Sacramento/Stockton	8,758,000	9,551,000
San Joaquin Valley	7,740,000	7,531,000
Southern California	55,017,000	51,713,000
Total Annual Boardings (Inter and Intraregional)	93,890,000	87,910,000
Intraregional Boardings	23,045,000	23,374,000
% Boardings Intraregional	25%	27%

2.2 MODE SHARE FOR INTERREGIONAL TRAVEL MARKETS

Interregional travel shares by mode of travel are shown in Figures 2.1 and 2.2 for the base Pacheco and Altamont alternatives, respectively[1]. Mode shares are very similar between the two alternatives, with Pacheco achieving an overall 8 percent

[1] For the remaining figures and tables in Section 2.0, the "San Joaquin Valley" market includes San Joaquin, Stanislaus, Merced, Madera, Fresno, and Kern Counties. The "Sacramento" market includes the six-county SACOG region. The "Bay Area" market includes the nine-county MTC region. The "Southern California" market includes the SCAG and SANDAG regions.

HST mode share, and Altamont achieving a 7 percent HST mode share. More notable differences can be seen for a few specific travel markets. For the Bay Area to/from Sacramento market, Altamont exhibits a higher HST mode share than Pacheco due to Altamont's more direct alignment and faster travel times in the market. For similar reasons, Pacheco exhibits a higher mode share for the Bay Area to/from AMBAG market. For the Bay Area to/from SCAG and San Diego markets, the Pacheco alternative exhibits a higher HST mode share than Altamont due to Pacheco's slightly faster travel times between the Bay Area from Southern California and Altamont's split of HST service between San Francisco and San Jose termini.

Figure 2.1 Pacheco Mode Shares for Key Markets

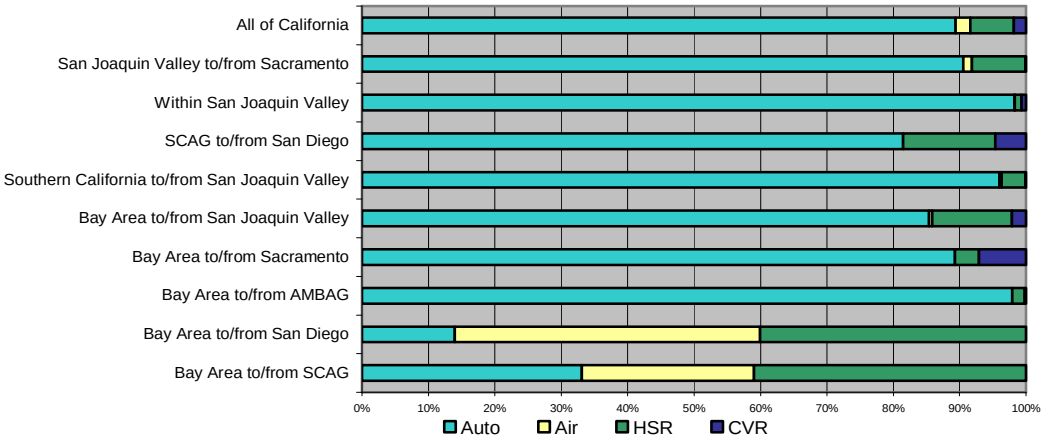
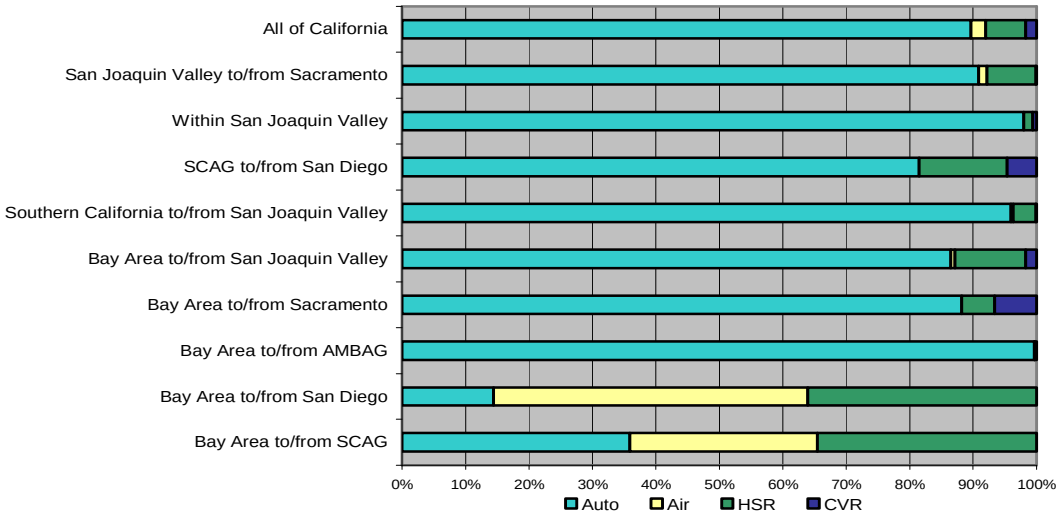


Figure 2.2 Altamont Mode Shares for Key Markets



2.3 HST RIDERSHIP BY MODAL SOURCE

Figure 2.3 displays the original modal source of HST interregional ridership. The modal source pattern is nearly identical for the Altamont and Pacheco alternatives, with the vast majority of HST trips (about 75 percent) being diverted from auto. About 15 percent of HST trips are diverted from air and eight percent are diverted from conventional rail. About two percent of HST ridership is induced; these trips will not occur in the absence of HST ridership.

The data in Table 2.2 indicate that about 6 percent of interregional auto trips in California will divert to HST in year 2030. The diversion rate is 33 percent for air travel and 27 percent for CVR. It is important to note that the CVR diversion rates do not reflect potential ridership gains as CVR is used as an access or egress option for HST, particularly within the Central Valley. Therefore, it is likely that the net diversion from CVR will be less than 27 percent.

Figure 2.3 Source of Interregional HST Trips

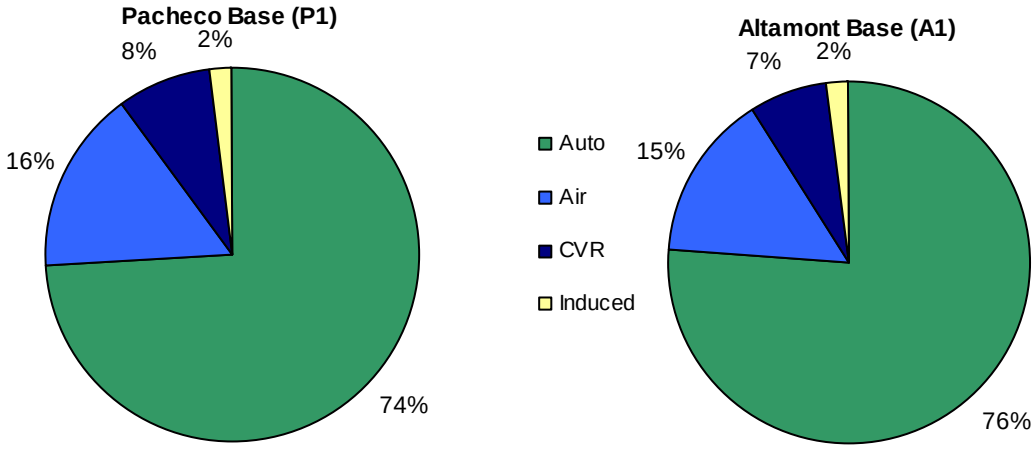


Table 2.2 Percent Diversion to HST by Mode

Source Mode	Percent of Interregional Statewide Trips Diverted	
	Pacheco Base (P1)	Altamont Base (A1)
Auto	6%	6%
Air	33%	33%
Conventional Rail	27%	27%

2.4 HST RIDERSHIP BY TRIP PURPOSE

Annual interregional high-speed rail ridership by trip purpose, as shown in Figure 2.4, is identical between the Altamont and Pacheco baseline alternatives. For both alternatives, business and commute trips represent about 55 percent of interregional HST travel, with recreation representing 34 percent and other purposes representing 11 percent.

This similarity between alternatives is repeated for trips to/from the Bay Area (Figure 2.5). However, recreational trips represent 43 percent of inter-regional HST travel to/from the Bay Area, an increase from the 34 percent of statewide travel. Commute trips represent 25 percent of HST trips to/from the Bay Area compared to 30 percent statewide. Business trips represent 19 percent of HST trips to/from the Bay Area compared to 25 percent statewide.

A comparison of annual intraregional HST ridership by trip purpose within the Bay Area, as shown in Figure 2.6, shows a large difference between the Altamont and Pacheco alternatives. Business and commute trips represent 80 percent of intraregional HST trips for the Altamont alternative, but only 53 percent for the Pacheco alternative. These trip purpose differences can be traced to the factors described in Section 2.1 that underlie intraregional boardings. Namely, the Altamont alternative connects major commute markets between the East Bay and both San Jose and San Francisco; HST service in these corridors would be substantially faster than other available transit options and thus is likely to attract a disproportionate share of commute trips. The Pacheco alternative serves a corridor that has a greater proportion of non-residential activity, and is therefore less likely to attract commute trips and more likely to attract recreational, shopping and other trips.

Figure 2.4 Statewide Interregional HST Ridership by Trip Purpose

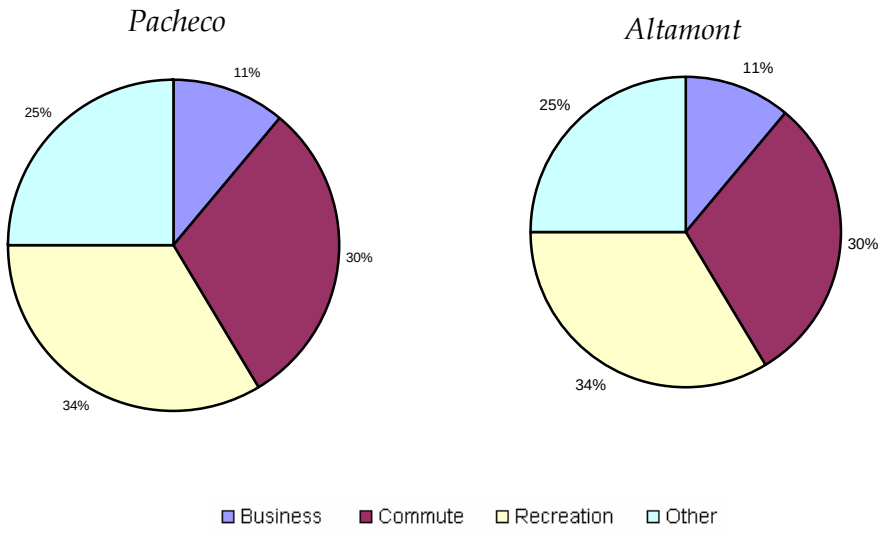


Figure 2.5 HST Ridership by Trip Purpose to/from the Bay Area

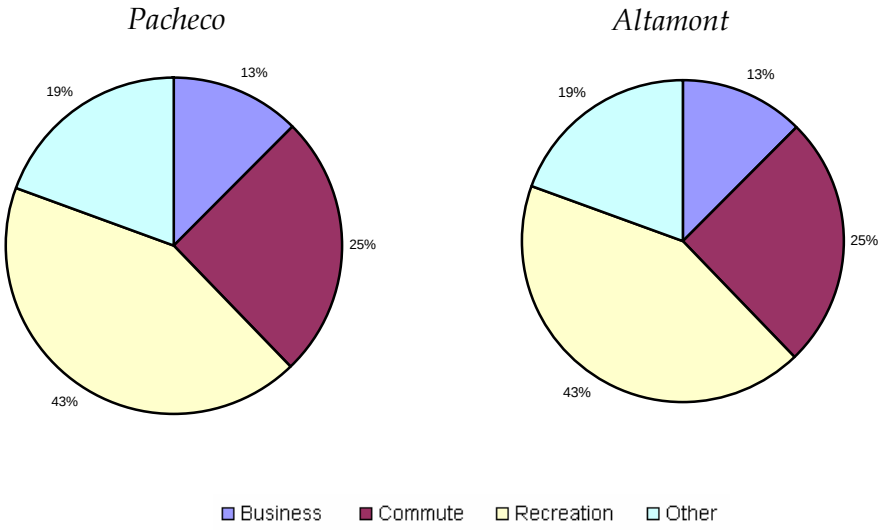
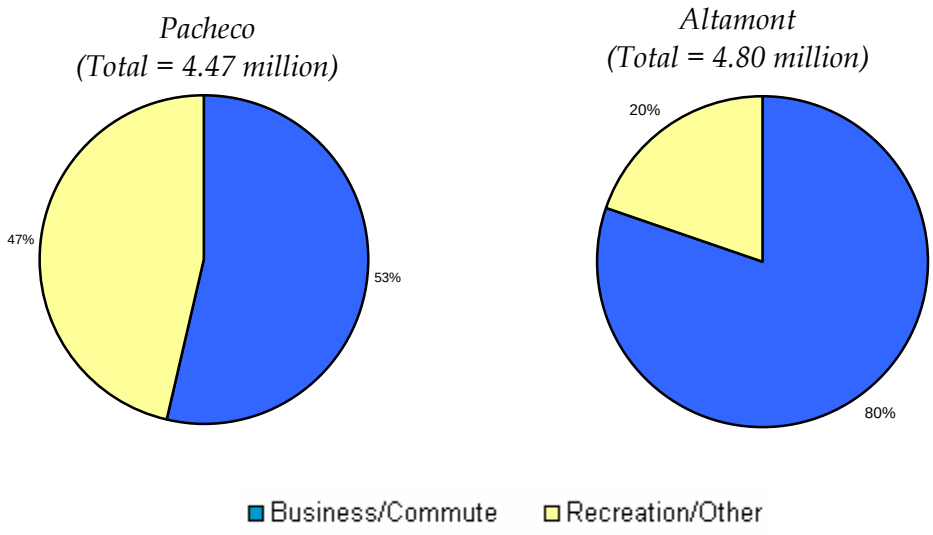


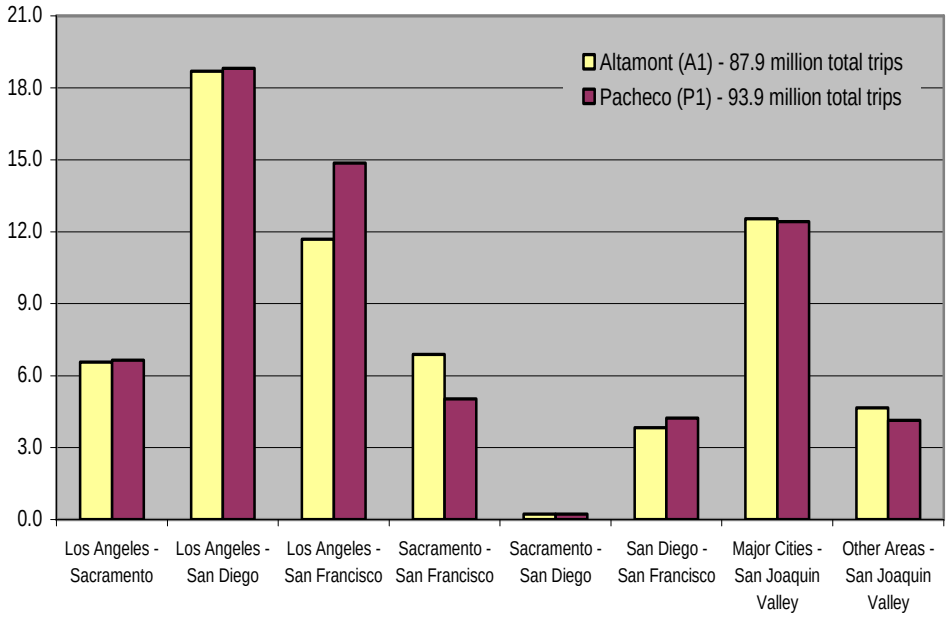
Figure 2.6 Annual Intraregional HST Ridership by Trip Purpose Within the Bay Area



2.5 INTERREGIONAL HST RIDERSHIP BY TRAVEL MARKET

Total annual interregional HST ridership for key travel markets is displayed in Figure 2.7. Noticeable differences exist between the alternatives in the Los Angeles to/from San Francisco and Sacramento to/from San Francisco markets. The Altamont alternative has higher ridership in the Sacramento to/from San Francisco market, whereas the Pacheco alternative has higher ridership in the Los Angeles-San Francisco market. These ridership differences arise from differences in HST travel times and fares between the two alternatives for station-pairs in these markets. For similar reasons reason, the Other Areas to/from San Joaquin valley market exhibits slightly higher ridership for Altamont, and the San Diego to/from San Francisco market shows slightly higher ridership for Pacheco.

Figure 2.7 Total Annual HST Ridership (Millions) by Travel Market[2]

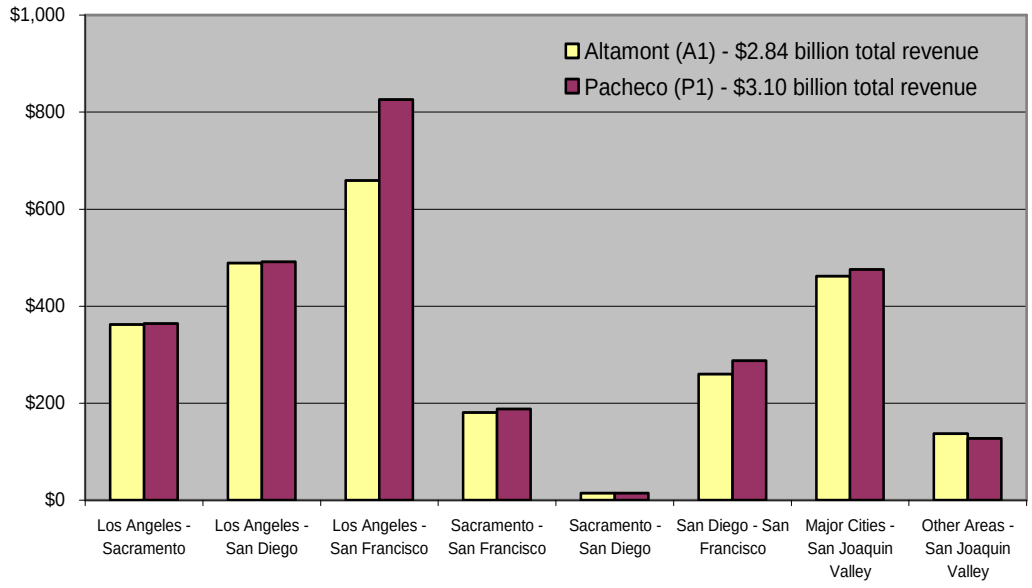


[2] In Figures 2.7 and 2.8, "Sacramento" is defined as the six-county SACOG region, "San Francisco" is the MTC region, "Los Angeles" is the SCAG region, "San Joaquin Valley" is San Joaquin, Stanislaus, Merced, Madera, Fresno and Kern Counties, "San Diego" is San Diego County, and the "Major Cities" are the SCAG and SACOG regions as well as San Diego.

2.6 HST REVENUE BY MARKET

Total annual interregional HST revenue for key travel markets is displayed in Figure 2.8. Some markets contribute more to the total revenue than total ridership due to the distance-based fare structure. The Los Angeles to/from San Francisco market contributes the most to revenue even though it is only the second or third largest ridership market. Revenue generation in the Sacramento to/from San Francisco market is nearly identical between the two alternatives in spite of the fact that Altamont is projected to have higher HST ridership than Pacheco in this market. This result arises from the shorter average travel distance (and associated lower fare) in this market for Altamont compared to Pacheco. Pacheco generates higher revenue than Altamont in four of the seven travel markets, with Altamont having higher revenue generation in one market and nearly identical revenue generation in the remaining two markets.

Figure 2.8 Total Annual HST Revenue by Travel Market (Millions of 2005 Dollars)



2.7 STATION BOARDINGS

Annual station boardings for Altamont and Pacheco alternatives are shown in Figure 2.9 with detailed boardings provided in Tables 2.3 and 2.4). The Transbay and San Jose stations have noticeably higher boardings for the Pacheco alternatives compared to Altamont, while the opposite situation exists for Sacramento and the two San Joaquin County stations (Stockton and Tracy).

Stations from Bakersfield southward show lower boardings for the Altamont Alternative, which is related to the split HST operating plan between San Jose and San Francisco termini.

Figure 2.9 Base HST Boardings by Station (Millions of Annual Boardings)

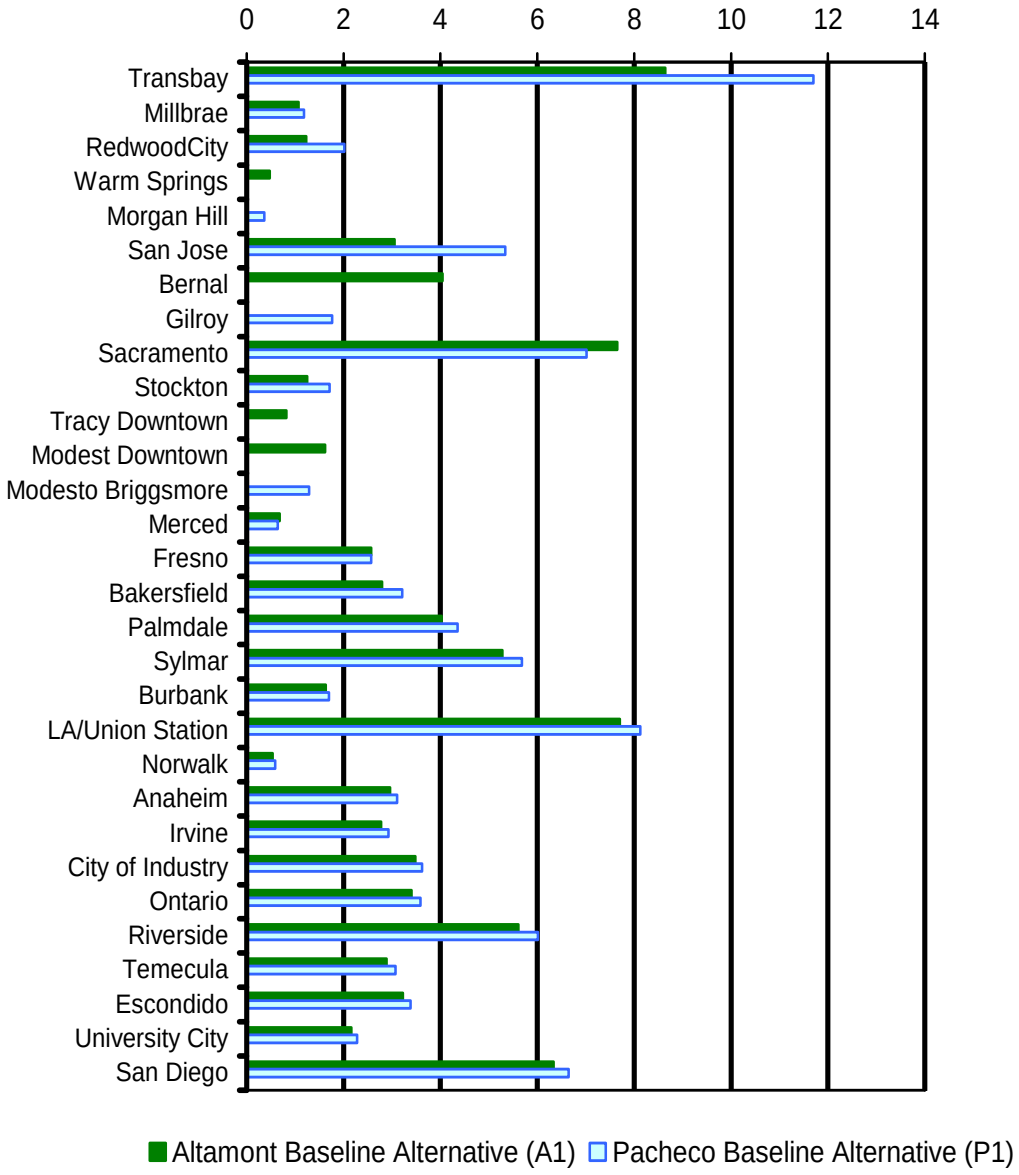


Table 2.3 HST Station Boardings for Base Pacheco Alternative (P1)

Station Name	Annual Boardings
San Francisco – Transbay	11,699,200
Millbrae	1,180,700
Redwood City	2,014,000
San Jose	5,338,000
Morgan Hill	363,000
Gilroy	1,767,000
Sacramento	7,019,000
Stockton	1,711,000
Modesto Briggsmore	1,290,000
Merced	641,000
Fresno	2,573,2000
Bakersfield	3,210,800
Palmdale	4,355,500
Sylmar	5,681,200
Burbank	1,698,900
Los Angeles Union Station	8,125,200
Norwalk	590,100
Anaheim	3,102,600
Irvine	2,926,700
City of Industry	3,619,600
Ontario	3,584,700
Riverside	6,012,700
Temecula	3,075,300
Escondido	3,382,800
University City	2,279,800
San Diego	6,649,500
Total Ridership	**93,890,000**

Table 2.4 HST Station Boardings for Base Altamont Alternative (A1)

Station Name	Annual Boardings
San Francisco – Transbay Terminal	8,642,500
Millbrae	1,070,600
Redwood City	1,229,900
Warm Springs	474,000
San Jose	3,052,300
Bernal	4,042,400
Sacramento	7,653,200
Stockton	1,251,800
Tracy Downtown	818,000
Modesto Downtown	1,618,000
Merced	683,300
Fresno	2,568,500
Bakersfield	2,797,000
Palmdale	4,025,100
Sylmar	5,279,800
Burbank	1,633,600
Los Angeles – Union Station	7,700,800
Norwalk	538,000
Anaheim	2,958,100
Irvine	2,771,600
City of Industry	3,483,900
Ontario	3,403,400
Riverside	5,610,600
Temecula	2,884,400
Escondido	3,224,000
University City	2,158,400
San Diego	6,336,800
Total Ridership	**87,910,000**

3.0 Sensitivity Tests

A series of sensitivity tests were conducted to test the impacts of changes in level of service on HST rail ridership and revenue. These tests were designed to assist in developing an improved operating plan and optimum fares, and to understand the impacts of potential changes in assumptions to the air and auto modes.

The initial year 2030 HST operating plan used for CSTM development and testing was derived from the High Speed Rail Authority's (HSRA) Year 2000 Business Plan[3]. Results from various sensitivity tests, which are displayed in Table 3.1, indicated that modifications and enhancements in HST frequencies can support higher ridership. Based on these sensitivity test results, a revised operating plan was developed for use in this alternatives analysis and the DEIR/S that included a doubling of HST frequency for local service between the Bay Area and Los Angeles, the Bay Area and Sacramento, San Diego and Sacramento, and Los Angeles and the San Joaquin Valley. Targeted increases in these corridors yielded a total systemwide increase of 30 percent in the number of daily train operations.

Additional sensitivity tests were run with air and auto travel times increased by six percent in all travel markets to approximate the assumptions used in Sensitivity Scenarios 2 and 3 in the Year 2000 Business Plan. Results of this sensitivity test, also shown in Table 3.1, indicate that boardings and revenue increased at the same relative rate as air and auto travel times.

[3] "Building a High-Speed Train System for California, Final Business Plan"; California High-Speed Rail Authority; June 2000.

Table 3.1 Level of Service Sensitivity Tests for HST

Sensitivity Test	Change in Level of Service	Percent Change from Base: Boardings	Percent Change from Base: Revenues
High-speed rail level of service tests			
Maintain average daily headways	Shift HST service from peak to off-peak periods to reach consistent headways throughout the day	-15%	-14%
Universal increase in HST frequency	HST frequencies doubled in all markets compared to Year 2000 Business Plan	15%	16%
Targeted increase in HST frequency	HST frequencies doubled compared to Year 2000 Business Plan for: • Bay Area - San Joaquin Valley • Bay Area - Sacramento • SCAG – San Joaquin Valley • San Diego - Sacramento	22%	24%
Air and auto level of service tests			
Higher air/auto times	6% increase based on a 30-minute increase in travel time from San Francisco to Los Angeles by car	6%	6%

Assumptions regarding air and auto cost increases remain a difficult issue given the volatility in these costs in the past five years alone. Results from a series of cost sensitivity tests are displayed in Table 3.2.[4] The sensitivity tests do show that HST ridership is highly sensitive to the assumptions of air and auto costs, and can increase as much as 46 percent with a 50 percent increase in air and auto costs, which seems quite reasonable compared to current trends in these costs. While increases in the HST fare predictably decrease ridership, the revenue for interregional HST trips still increases by two percent (test 14 in Table 3.2). This finding is important in case higher revenue is needed in order to support the HST operations and capital costs. However, if the fare increases substantially (75 percent in test number 8), the revenues from the increased fares cannot offset the decrease in boardings enough to provide higher systemwide revenue in spite of a slightly increased auto operating cost (25 percent).

[4] The base air/auto cost assumptions and HST fare structure were used for all model runs reported in prior and subsequent sections of this report as well as in the DEIR/S.

Table 3.2 Cost Sensitivity Tests for HST

Test No.	Change in Level of Service		Percent Change[a]	
	HSR Fare Increase	Air and Auto Cost Increase[b]	HSR Boardings	HSR Revenues
1	+25%	+25%	+35%	+37%
2	0%	+25%	+22%	+22%
3	+35%	+35%	+35%	+38%
4	+50%	+25%	+15%	+18%
5	+75%	+75%	+35%	+43%
6	+150%	+200%	+72%	+81%
7	+200%	+150%	+0.1%	+4%
8	+75%	+25%	-2%	0%
8	+60%	+20%	+4%	+6%
10	+20%	+50%	+11%	+13%
11	+50%	+25%	+15%	+18%
12	+25%	+50%	+13%	+19%
13	+100%	+50%	-6%	+1%
14	+25%	0%	-13%	+2%
15	0%	+50%	+46%	+53%

[a] Percent change in interregional boardings and revenue from the Altamont Base Alternative (A1).

[b] This is an increase in airfares and in the distance-based auto operating cost. There is no change in tolls or parking costs for these scenarios.

4.0 Pacheco Alternatives

Five network alternatives and seven alignment alternatives were tested using the Pacheco pass. A summary description of the network alternatives is provided in Appendix A, Table A.1, while the alignment and station alternatives are summarized in Table A.8. A detailed description of each of these alternatives can be found in Section 7 of the DEIR/S.

4.1 NETWORK ALTERNATIVES

Detailed ridership at Bay-Area and Central Valley stations and total ridership and revenue for the network alternatives can be found in Appendix A, Tables A.2 through A.7[5]. For each alternative, the amount of service is held constant in order to better compare the network changes. In the case of the combined San Francisco and Oakland alternative (P3), service from San Jose is split proportionally between the two Bay Area termini (based on the ridership of the P1 and P2 alternatives), which decreases HST frequency to each individual station north of San Jose compared to the base (P1). Even though this alternative directly reaches more travelers in terms of station location, the decreased frequency to each station is perceived by riders as a service reduction, leading to lower ridership and revenues. The San Jose terminus (P4) increases the number of boardings in Stockton/Sacramento due to a shift in people from the North and East Bay now driving to Sacramento or Stockton to access HST service to Southern California. The Transbay alternatives (P5 and P6) both have higher ridership and revenue than the base (P1) because service is not split and every train serves all three destinations (San Francisco, San Jose, and Oakland).

[5] Travel model results for the Pacheco network alternatives P1 through P6 reflect CSTM runs that included HST stations in both Morgan Hill and Gilroy. These model results are included in this report as well as the DEIR/S for consistency purposes. The formal definition of the Pacheco alternatives in the DEIR/S generally includes an HST station in either Morgan Hill or Gilroy.

Figure 4.1 2030 Annual Boardings, Pacheco Network Alternatives

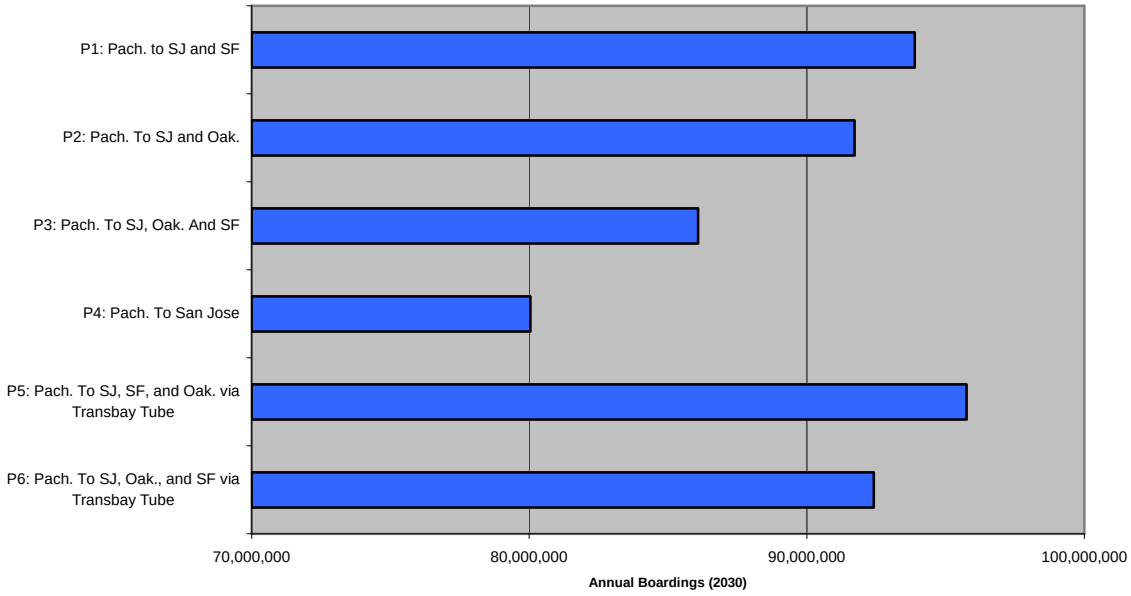
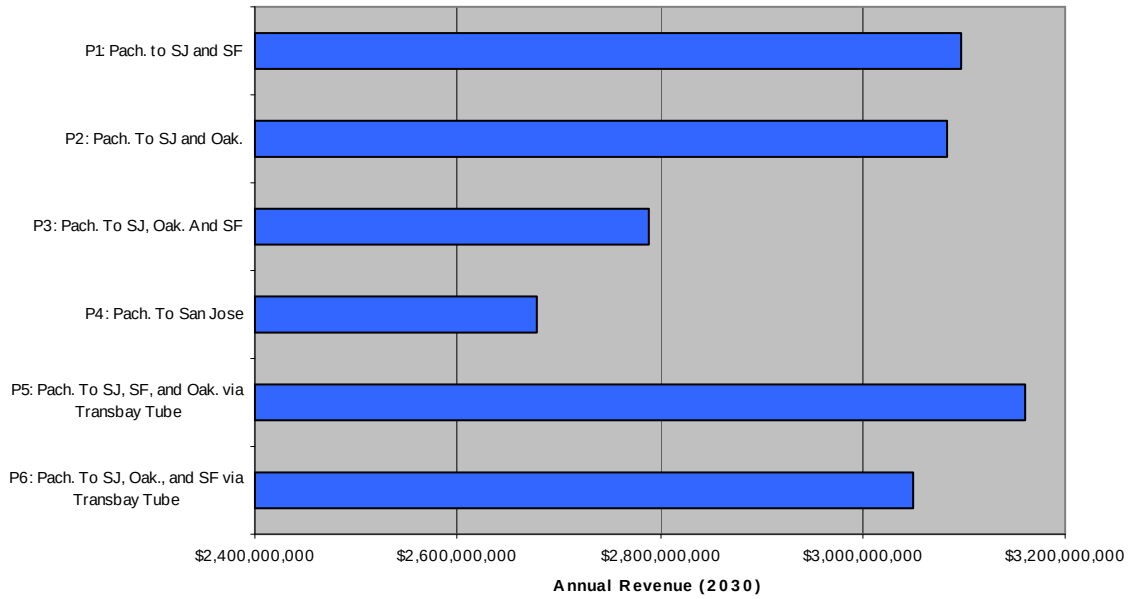


Figure 4.2 2030 Annual Revenue, Pacheco Network Alternatives



4.2 ALIGNMENT AND STATION ALTERNATIVES

The Pacheco Pass alignment and station alternative results are summarized in Appendix A, Table A.9 through A.15. NP1, which uses the GEA north alignment to the Central Valley, has an overall decrease in boardings due to longer travel times between the Bay Area and Southern California and a drop in overall service to the Merced Station. However, there is an increase in the number of boardings in the Bay Area and Stockton/Sacramento due to improved travel times between these two regions. NP6, which uses the Palo Alto station instead of Redwood City and eliminates the Morgan Hill station near Gilroy, has slightly higher interregional boardings at Palo Alto.

NP4, which has slightly slower travel times in the Central Valley, has a negligible decrease in boardings and revenue. Substituting the Modesto Downtown station for Modesto/Briggsmore (NP5) leads to a small increase in ridership. The overall ridership is similar when using Castle Air Force Base instead of downtown Merced (NP6). However, riders are traveling from farther away to visit Castle AFB. This is evident in the increase in the number of "long" boardings at Castle compared to Merced in the P1 alternative. These boardings are likely coming from the Bay Area, where there is a very slight increase in ridership.

An Oakland 12th Street station (NP7) has lower overall system ridership than an Oakland 7th Street Station or either of the San Francisco termini. Interregional boardings are substantially lower at 12th Street compared to the 7th Street station, indicating that interregional travelers may find the 7th Street station more convenient for regionwide connections such as BART to San Francisco. However, Oakland 12th Street experiences more intraregional boardings compared to the P2 alternative (which uses the 7th Street station).

Figure 4.3 Annual Boardings, Pacheco Alignment Alternatives

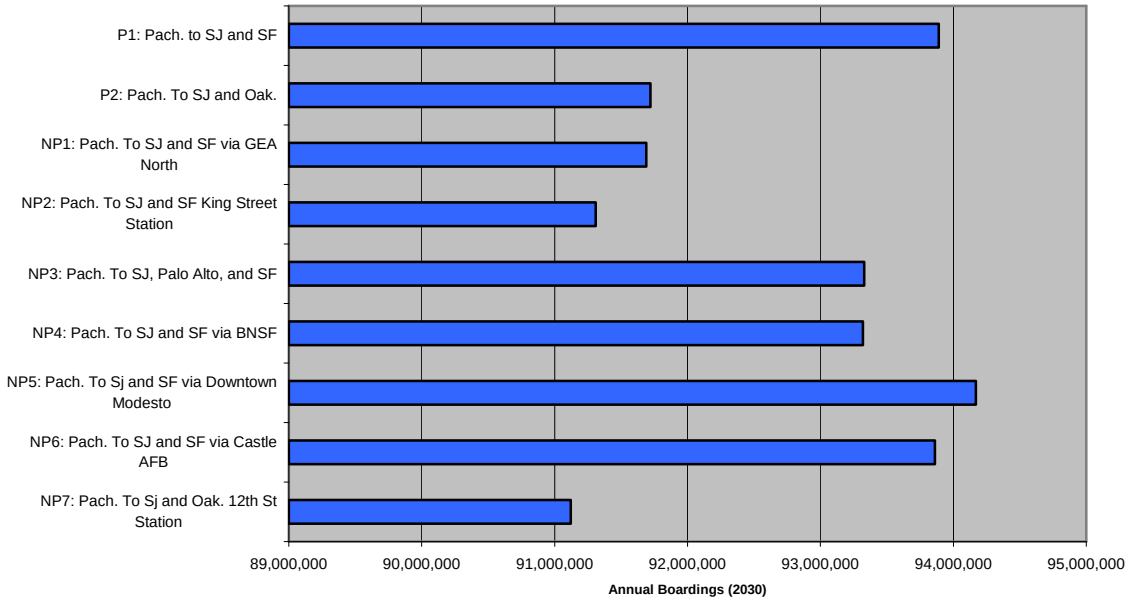
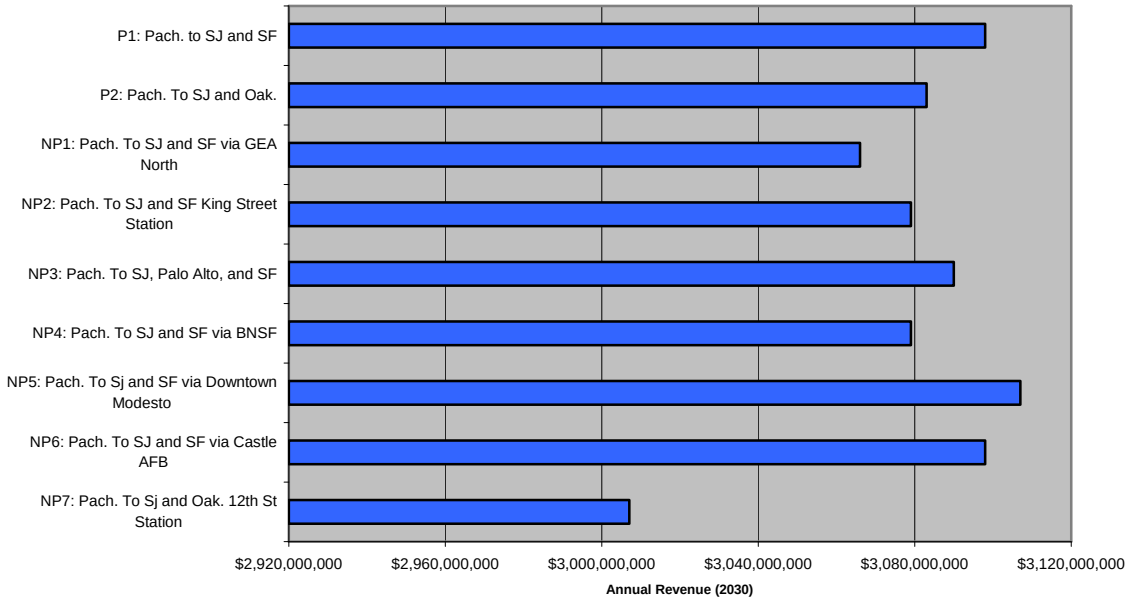


Figure 4.4 2030 Annual Revenue, Pacheco Alignment Alternatives



5.0 Altamont Alternatives

A total of 11 network alternatives and nine alignment alternatives tested that utilized the Altamont pass. A summary description of the network alternatives is provided in Appendix A, Table A.17, while the alignment and station alternatives are summarized in Table A.28. A detailed description of each of these alternatives can be found in Section 7 of the DEIR/S. Tables detailing ridership at Bay Area and Central Valley stations, and total ridership and revenue can be found in Table A.17 to A.37.

Several operating assumptions are incorporated into the forecasts for the Altamont alternatives:

- The total number of train-operations per day is equal to Pacheco alternatives.
- Service to the Bay Area is split between the North (San Francisco or Oakland) and South (San Jose) in many alternatives. It was assumed that any service would be weighted towards the north 65/35. The no-bay-crossing alternative (A9) is weighted 65/35 towards the San Francisco terminus (versus Oakland).
- In alternative A3 service is split between San Francisco and Oakland termini according to the total ridership of A5 (San Francisco-only terminus) compared to A6 (Oakland-only terminus).
- The no-bay alternative (A9) includes a dwell time at the San Jose station that is required for the train to turn-around.
- All express trains stop at the first station before/last station after the service is split. In most alternatives this station is Bernal.

Sections 5.1 and 5.2 discuss the Altamont network and alignment alternatives.

5.1 NETWORK ALTERNATIVES

The network alternative results for the Altamont Pass alternative are detailed in Appendix A, Table A.18 to A.27, with a systemwide summary presented in Table 5.1. Overall, the base Altamont alternative (A1) performs slightly poorer than the Pacheco base alternative (P1). Pacheco performs better in all regions except for Sacramento/Stockton, where Altamont outperforms Pacheco due to the shorter travel times between Sacramento and the Bay Area. A major benefit of the Altamont alternative over Pacheco is the more direct service to the major commuter shed east of the Bay Area. While this benefit is not very evident in the interregional boardings (other than slightly increased ridership in Stockton and Sacramento), there is a definite increase in commute riders within the Bay Area itself. At a station-level, there are almost three-times as many boardings at Bernal (the outermost station within the Bay Area for Altamont) than the sum of

Morgan Hill and Gilroy boardings in P1 (the outermost Pacheco stations within the Bay Area). However, the benefit of servicing this commuter shed in the Altamont Alternative is mostly offset by the elimination of direct service between San Jose and San Francisco (San Jose has 1.2 million annual intraregional boardings in P1 and only 720,000 in A1).

Altamont to San Jose and Oakland (A2) performs slightly better than the base (A1). This result is due entirely to interregional travel, as intraregional travel within the Bay Area steeply declines when service is switched to the East Bay. Interregional travel to the Bay Area can still reach San Francisco in comparable time because the travel time for high-speed trains on the east side of the bay is much faster. A2 performs slightly worse than the comparable Pacheco alternative (P2) and does not appear to have the same intraregional benefit to commuters that A1 has over P1.

Altamont to San Jose, Oakland, and San Francisco (A3) has the disadvantage of service being split in three directions. As such, it performs almost eight percent worse than the base Altamont alternative (A1) and worse than the comparable Pacheco alternative (P3).

One of the features of the initial Altamont network alternatives is the necessary division of trains entering the Bay Area to either go north to San Francisco or Oakland or South towards San Jose. Since service frequency was found to have a high impact on ridership, several Altamont alternatives were tested without splitting service. There are three Altamont network alternatives that clearly perform better than the rest in Figure 5.1. All three (A5, A6, and A10) do not have any splits in service in the Bay Area. The splitting of service without the addition of trains clearly impacts the ridership of most of the Altamont alternatives. The comparison of the revenues for these alternatives in Figure 5.2 is similar, but the advantage of non-split service is not as pronounced.

Among the Altamont alternatives with a single Bay Area terminal, those terminating in San Francisco and Oakland perform the best (A5 and A6) compared to Union City and San Jose (A7 and A4). Altamont to San Jose (A4) performs slightly better than the comparable Pacheco alternative (P4). A4 has more intraregional Bay Area boardings; however, a large portion of the interregional traffic to the Bay Area is using the Bernal station as opposed to San Jose, suggesting that San Jose is not their final destination within the Bay Area. The Altamont alternatives with single destinations to San Francisco and San Jose show that the major benefits of these alternatives are seen on an interregional basis and actually lose intraregional trips. A7, with a single terminus at Union City does not perform as well as the base. It suffers especially from not providing any substantial intraregional service within the Bay Area.

Altamont to San Jose and San Francisco via the Peninsula has increased ridership compared to the base Altamont alternative (A1). The increase, however, is mainly due to intraregional trips, in particular the service to Palo Alto in lieu of Redwood City. The interregional trips actually decrease in the Bay Area for this

alternative. This result is partially due to the longer travel times associated with going to San Jose. A9 serves all major Bay Area destinations (San Jose, San Francisco, and Oakland) with service only split two-ways. Sixty-five percent of trains serving the Bay Area go through San Jose to San Francisco, accounting for the increased ridership at San Jose compared to the base (normally, San Jose receives only 35 percent of the trains in the Bay Area). There also is an increase in intraregional ridership at San Jose, likely due to the availability of non-stop service between it and San Francisco. This alternative performs poorer than the base Altamont alternative (A1). Its most notable deficiency is the increased travel time to get to San Francisco. Trains are assessed a dwell time when passing through San Jose to San Francisco to account for the time it takes to turn the trains around. This dwell time severely degrades the service (and thus the ridership) into and out of San Francisco, Millbrae, and Redwood City.

There are two Altamont network alternatives that consider the use of a new Transbay tube. A10 does not split service, but serves only Oakland and San Francisco. A11 serves Oakland and San Francisco with one line and San Jose with another, splitting service between the two 65/35. Both alternatives perform better than the base Altamont alternative. A10 performs better than A11 – likely due to the superior headways.

Figure 5.1 2030 Annual Boardings, Altamont Network Alternatives

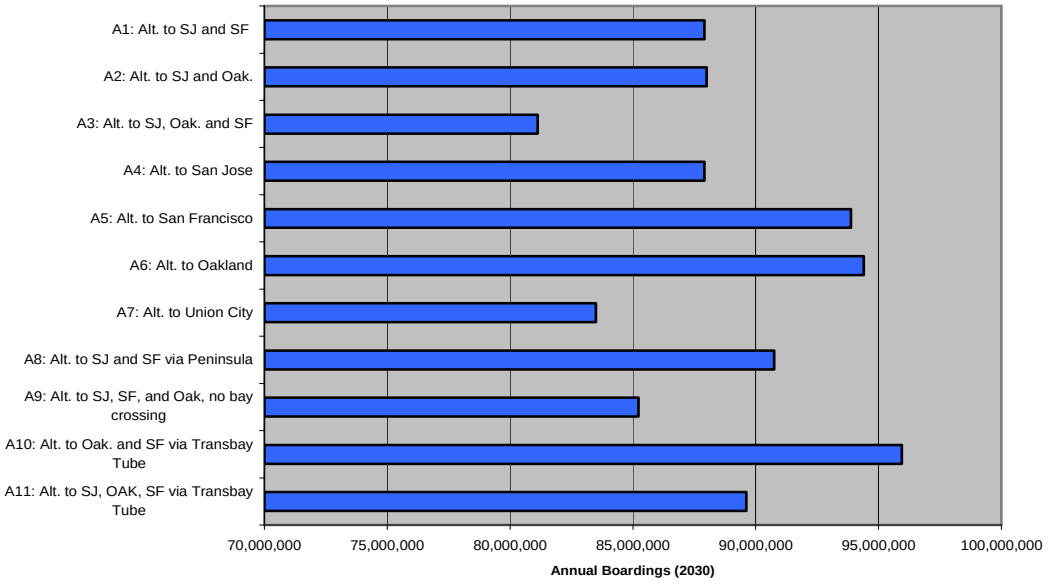
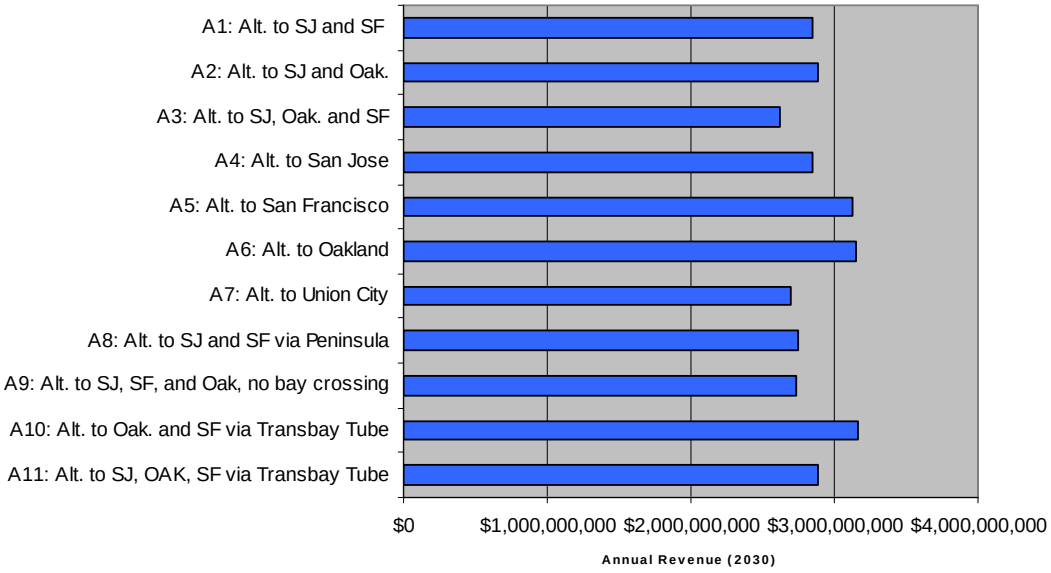


Figure 5.2 2030 Annual Revenue, Altamont Network Alternatives



5.2 ALIGNMENT AND STATION ALTERNATIVES

The alignment and station alternative results for the Altamont Pass alternatives are detailed in Table A.29 to A.37. NA1, with service to the Pleasanton BART station in lieu of Bernal performs worse than the base Altamont alternative (A1). However, it has slightly more Bay Area boardings than A1. While Pleasanton has more attractiveness within the Bay Area, Bernal is more attractive to riders in the rest of the State. Livermore/I-580 and Livermore/Downtown, tested in the NA2 and NA4 alternatives respectfully, are much less popular than Bernal. Some of the boardings that were going to Bernal are shifted towards San Jose in these alternatives. NA3 and NA5, predictably, show that the Tracy ACE and Briggsmore station locations are slightly less popular than the Tracy Downtown and Modesto downtown station locations. Using the Freemont Bridge, tested in NA6, has no distinguishable effect on ridership or revenue. Using the King Street station instead of the Transbay terminal (NA7) produces lower ridership, in particular for intraregional trips. The 12th street terminus used in the NA8 alternative has a higher ridership than both the base Altamont (A1) as well as A2. Using the BNSF alignment in the central valley is slightly slower, thus yields a slight decrease in the overall ridership and revenue.

Figure 5.3 2030 Annual Boardings, Altamont Network Alternatives

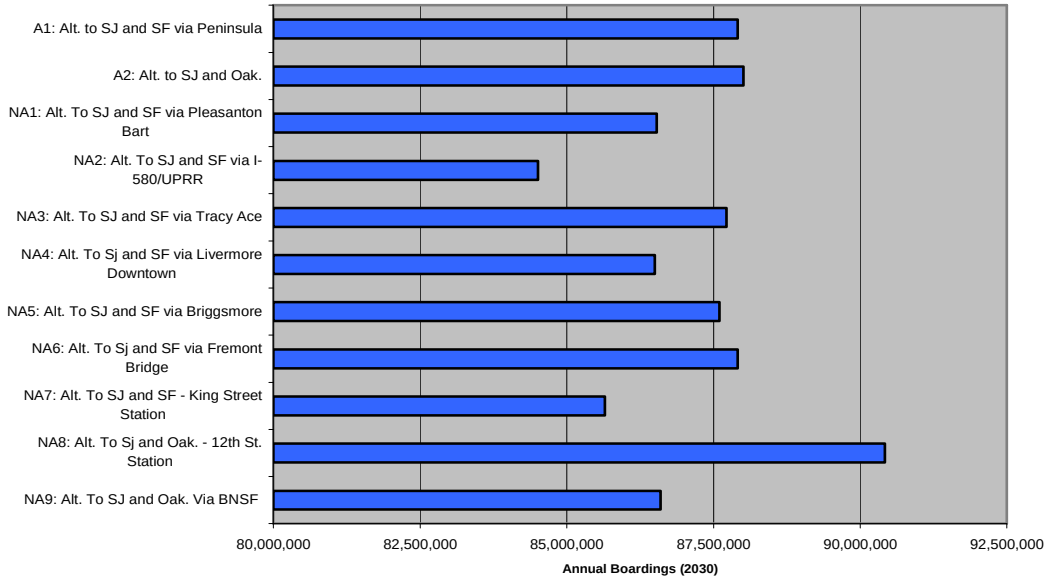
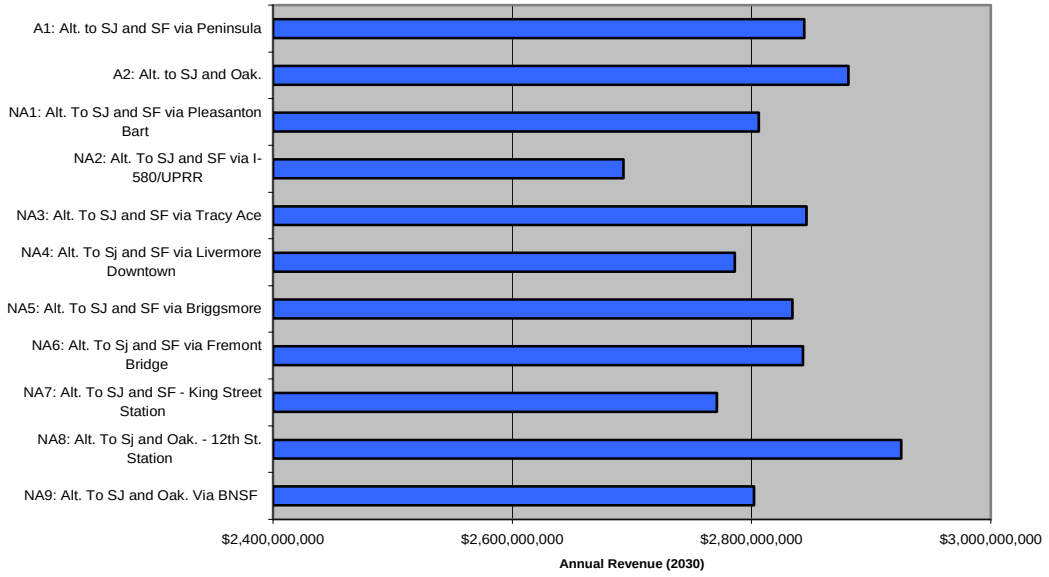


Figure 5.4 2030 Annual Revenue, Altamont Network Alternatives



6.0 Altamont with Pacheco Alternatives

Four alternatives were tested using a combination of the Altamont and Pacheco alignments. These alternatives took advantage of the quicker route between the Bay Area and Southern California (Pacheco), as well as the quicker route between the Bay Area and Sacramento (Altamont). A summary description of the network alternatives is provided in Appendix A, Table A.38. The assumed number of train operations was increased to take advantage of the expanded rail network. These assumptions/changes include:

- The local service between Southern California and the Bay Area is increased by 50 percent. The service for these local trains is split between Altamont and Pacheco Alignments;
- Sacramento to Bay Area service uses the Altamont Alignment; and
- Express service between Southern California and the Bay Area uses the Pacheco alignment.

The ridership for these alternatives is expected to be higher than other alternatives, both due to improved service, expanded number of stations, and an increase in the overall number of assumed trains.

Detailed ridership at Bay-Area and Central Valley stations and total ridership and revenue for the alternatives can be found in Appendix A, Tables A.39 through A.42. The Altamont plus Pacheco alternative that terminates in San Francisco (AP1) performs better than both the Altamont and Pacheco Base alternatives (A1 and P1); however, the projected revenue for AP1 is not as high as A1 or P1. The combined alternative that terminates in San Jose, San Francisco, and Oakland (AP3) performs the worst out of this set. Its service frequency suffers from train service being split three-ways upon arriving in the Bay Area.

Figure 6.1 2030 Annual Boardings, Altamont plus Pacheco Alternatives

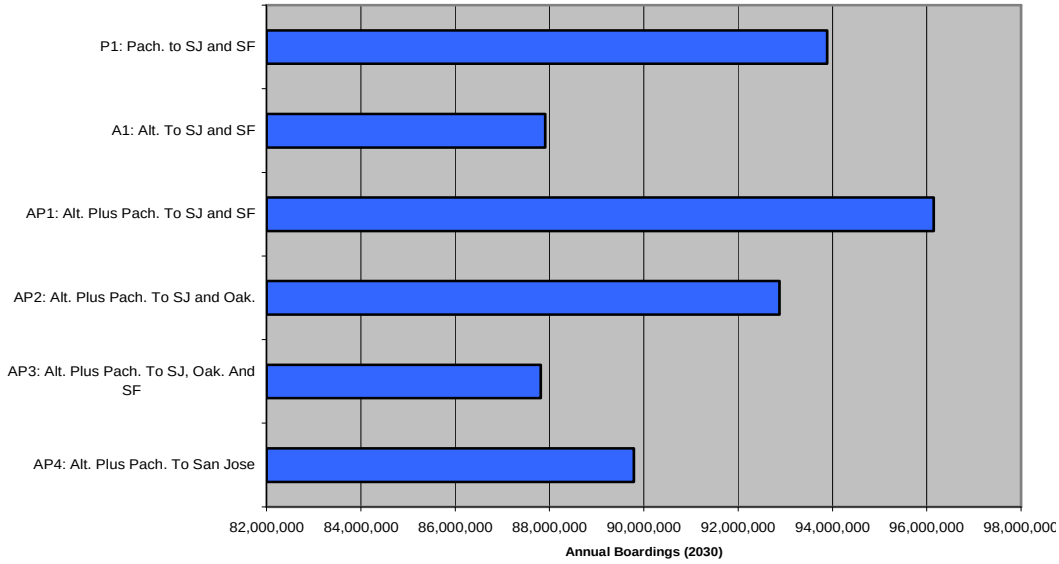
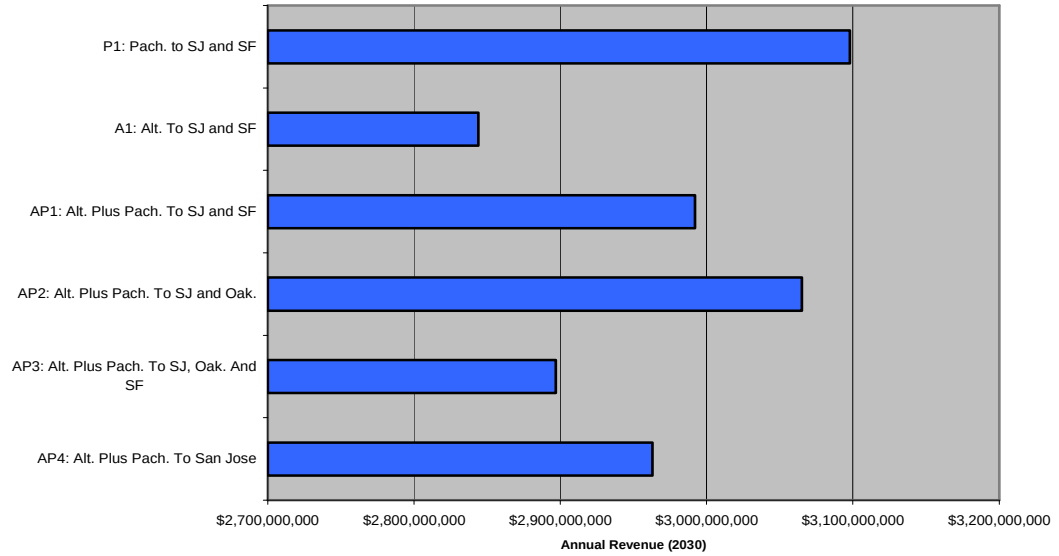


Figure 6.2 2030 Annual Revenue, Altamont plus Pacheco Alternatives



Appendix A. Ridership Tables

Definitions for Tables

Interregional trips include all trips with both ends in California and whose origin and destination are in different regions.

Intraregional trips include trips with both ends in one of the 14 regions in the State.

Short trips include the interregional trips that are less than 100 miles.

Long trips include the interregional trips that are longer than 100 miles.

List of stations in Southern California

- Bakersfield
- Palmdale
- Sylmar
- Burbank
- Los Angeles Union Station
- Norwalk
- Anaheim
- Irvine
- City of Industry
- Ontario
- Riverside
- Temecula
- Escondido
- University City
- San Diego

List of stations in Bay Area

- San Francisco Downtown – Transbay
- San Francisco Downtown – King Street
- Millbrae
- Redwood City

- Palo Alto
- Oakland – 7th Street
- Oakland – 12th Street
- Oakland Airport
- Union City
- Shinn
- Warm Springs
- San Jose
- Bernal
- Dublin
- Livermore / I-580
- Livermore Downtown
- Morgan Hill
- Gilroy

List of stations in the Sacramento Region

- Sacramento
- Stockton
- Tracy Downtown
- Tracy ACE

List of stations in the San Joaquin Valley

- Modesto Downtown
- Modesto Briggsmore
- Merced
- Castle Air Force Base
- Fresno
- Bakersfield

Table A.1 Pacheco Network Alternatives

Network Alternative Name and Description
P1 – Pacheco to San Jose and San Francisco From San Francisco to San Jose, this network alternative would use the existing Caltrain rail ROW. The Pacheco and Henry Miller (to the UPRR) alternatives would be used between San Jose and the Central Valley. The BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments would be used in the Central Valley.
P2 – Pacheco to San Jose and Oakland From Oakland to San Jose, this network alternative would use the Niles/I-880 alignment. The Pacheco and Henry Miller (to the UPRR) alternatives would be used between San Jose and the Central Valley. The BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments would be used in the Central Valley.
P3 – Pacheco to San Jose, San Francisco, and Oakland From San Francisco to San Jose, this Network Alternative would use the existing Caltrain ROW. From Oakland to San Jose, the Niles/I-880 alignment would be used. The Pacheco and Henry Miller (to the UPRR) alternatives would be used between San Jose and the Central Valley, and the BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments would be used in the Central Valley.
P4 – Pacheco to San Jose The Pacheco and Henry Miller (to the UPRR) alternatives would be used between San Jose and the Central Valley, and the BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments would be used in the Central Valley.
P5 – Pacheco to San Jose, San Francisco, and Oakland via Transbay Tube From Oakland to San Francisco, this network alternative would use a Transbay tube crossing. From San Francisco to San Jose, this network alternative would use the existing Caltrain ROW. From San Jose, this network alternative would use the Pacheco and Henry Miller (to the UPRR) alignment alternatives and the BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments would be used in the Central Valley.
P6 – Pacheco to San Jose, Oakland, and San Francisco via Transbay Tube This network alternative would require a new Transbay tube from San Francisco to Oakland. From Oakland to San Jose, this network alternative would use the Niles/I-880 alignment. From San Jose, this network alternative would use the Pacheco and Henry Miller (to the UPRR) alignment alternatives and the BNSF N/S (north of Merced) and UPRR N/S (south of Merced) alignments in the Central Valley.

Table A.2 P1 – Pacheco to San Jose and San Francisco

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,140,547	7,904,769	–	10,045,316	10,045,316	1,669,864	11,715,180
Millbrae	104,670	480,444	–	585,114	585,114	591,534	1,176,647
Redwood City	275,913	1,179,659	147,388	1,308,184	1,455,572	557,585	2,013,157
San Jose	630,976	3,473,512	176,977	3,927,511	4,104,488	1,234,039	5,338,528
Morgan Hill	15,534	97,272	185	112,621	112,806	247,649	360,455
Gilroy	884,883	714,009	324,365	1,274,527	1,598,892	171,587	1,770,478
Sacramento/Stockton	3,915,491	4,842,723	272,400	8,485,814	8,758,214	–	8,758,214
Modesto Briggsmore	878,965	415,534	196,024	1,098,475	1,294,499	–	1,294,499
Merced	235,784	406,843	95,423	547,203	642,627	–	642,627
Fresno	1,291,726	1,289,876	56,588	2,525,014	2,581,602	–	2,581,602
Bakersfield	1,342,396	1,878,874	–	3,221,270	3,221,270	–	3,221,270
Palmdale through Los Angeles Union Station	2,865,652	9,199,638	102,450	11,962,840	12,065,290	7,880,129	19,945,419
Orange County: Norwalk through Irvine	2,625,060	1,271,199	149,052	3,747,206	3,896,259	2,726,052	6,622,311
City of Industry through San Diego	6,050,861	14,432,560	383,542	20,099,879	20,483,420	7,966,193	28,449,613

	Annual Ridership for Regions
Bay Area	22,374,446
Sacramento/Stockton	8,758,214
San Joaquin Valley	7,739,997
Southern California	55,017,343

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**93,890,000**	**6.8%**
Revenue	**$3,098,000,000**	**9.0%**

Table A.3 P2 – Pacheco to San Jose and Oakland

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 7th Street	2,349,308	8,166,816	–	10,516,124	10,516,124	155,078	10,671,202
Oakland – Airport	147,415	665,842	–	813,257	813,257	485,687	1,298,944
Union City	293,732	1,317,949	147,415	1,464,266	1,611,681	202,860	1,814,541
Warm Springs	86,435	279,632	48,162	317,905	366,066	157,403	523,469
San Jose	539,669	2,917,910	170,306	3,287,273	3,457,579	809,789	4,267,368
Morgan Hill	14,284	93,760	549	107,494	108,044	158,855	266,899
Gilroy	965,617	700,635	365,883	1,300,369	1,666,252	130,663	1,796,915
Sacramento/Stockton	3,808,629	4,728,832	431,808	8,105,653	8,537,461	–	8,537,461
Modesto Briggsmore	867,096	323,948	195,577	995,466	1,191,044	–	1,191,044
Merced	239,344	422,835	48,162	614,017	662,179	–	662,179
Fresno	1,298,904	1,291,945	48,162	2,542,688	2,590,850	–	2,590,850
Bakersfield	1,338,459	1,866,591	–	3,205,050	3,205,050	–	3,205,050
Palmdale through Los Angeles Union Station	2,858,212	9,210,994	101,085	11,968,121	12,069,206	7,880,129	19,949,334
Orange County: Norwalk through Irvine	2,595,794	1,234,444	148,514	3,681,724	3,830,238	2,726,052	6,556,291
City of Industry through San Diego	6,015,100	14,407,160	343,725	20,078,535	20,422,260	7,966,193	28,388,453

	Annual Ridership for Regions
Bay Area	20,639,339
Sacramento/Stockton	8,537,461
San Joaquin Valley	7,649,123
Southern California	54,894,078

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**91,720,000**	**-2.3%**
Revenue	**$3,083,000,000**	**-0.5%**

Table A.4 P3 – Pacheco to San Jose, San Francisco, and Oakland

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,050,979	3,883,306	373	4,933,912	4,934,285	591,475	5,525,761
Millbrae	88,405	329,935	–	418,340	418,340	146,602	564,942
Redwood City	127,759	489,400	81,131	536,027	617,159	182,799	799,958
Oakland – 7th Street	923,593	2,659,247	–	3,582,840	3,582,840	43,388	3,626,228
Oakland – Airport	97,731	232,204	42,338	287,597	329,935	123,582	453,516
Union City	107,056	222,132	58,004	271,184	329,189	88,213	417,402
Warm Springs	53,901	87,846	41,405	100,342	141,747	77,387	219,134
San Jose	504,507	2,698,601	165,434	3,037,674	3,203,108	643,021	3,846,128
Morgan Hill	12,496	96,052	373	108,175	108,548	109,777	218,326
Gilroy	932,546	692,135	385,141	1,239,540	1,624,681	103,076	1,727,757
Sacramento/Stockton	3,814,671	4,270,499	436,058	7,649,112	8,085,171	–	8,085,171
Modesto Briggsmore	851,974	319,490	197,700	973,764	1,171,464	–	1,171,464
Merced	231,271	334,224	52,596	512,900	565,496	–	565,496
Fresno	1,267,330	1,069,816	51,663	2,285,483	2,337,146	–	2,337,146
Bakersfield	1,319,179	1,615,915	–	2,935,094	2,935,094	–	2,935,094
Palmdale through Los Angeles Union Station	2,833,074	8,693,750	100,715	11,426,109	11,526,823	7,880,129	19,406,952
Orange County: Norwalk through Irvine	2,599,005	1,087,908	161,517	3,525,395	3,686,912	2,726,052	6,412,965
City of Industry through San Diego	6,010,257	13,790,112	387,939	19,412,429	19,800,368	7,966,193	27,766,561

	Annual Ridership for Regions
Bay Area	17,399,152
Sacramento/Stockton	8,085,171
San Joaquin Valley	7,009,199
Southern California	53,586,478

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**86,080,000**	**-8.3%**
Revenue	**$2,790,000,000**	**-9.9%**

Table A.5 P4 – Pacheco to San Jose

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Jose	1,707,950	9,672,046	189,386	11,190,610	11,379,996	195,374	11,575,370
Morgan Hill	12,614	71,842	183	84,273	84,456	138,178	222,634
Gilroy	484,068	322,469	189,386	617,151	806,537	83,315	889,852
Sacramento/Stockton	4,169,789	5,384,165	225,399	9,328,555	9,553,954	–	9,553,954
Modesto Briggsmore	606,365	258,121	154,105	710,381	864,486	–	864,486
Merced	125,222	246,604	46,067	325,759	371,826	–	371,826
Fresno	940,716	951,319	12,614	1,879,421	1,892,035	–	1,892,035
Bakersfield	1,191,891	1,718,918	1,097	2,909,712	2,910,809	–	2,910,809
Palmdale through Los Angeles Union Station	2,680,292	8,297,716	98,166	10,879,841	10,978,008	7,880,129	18,858,136
Orange County: Norwalk through Irvine	2,276,292	1,057,346	130,157	3,203,480	3,333,638	2,726,052	6,059,690
City of Industry through San Diego	5,760,561	13,114,453	358,481	18,516,533	18,875,014	7,966,193	26,841,207

	Annual Ridership for Regions
Bay Area	12,687,856
Sacramento/Stockton	9,553,954
San Joaquin Valley	6,039,156
Southern California	51,759,034

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**80,040,000**	**-14.8%**
Revenue	**$2,678,000,000**	**-13.6%**

Table A.6 P5 – Pacheco to San Jose, San Francisco, and Oakland via Transbay Tube

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intraregional	Total
San Francisco Downtown – Transbay	1,157,457	4,350,821	–	5,508,278	5,508,278	1,968,398	7,476,675
Millbrae	105,257	483,362	–	588,620	588,620	516,289	1,104,908
Redwood City	215,180	954,034	131,385	1,037,829	1,169,214	459,232	1,628,446
Oakland – 7th Street	1,211,205	4,512,626	–	5,723,831	5,723,831	870,934	6,594,765
San Jose	594,218	3,195,230	178,228	3,611,220	3,789,449	1,048,280	4,837,729
Morgan Hill	15,677	97,046	187	112,536	112,722	169,645	282,367
Gilroy	934,438	766,848	309,613	1,391,673	1,701,286	156,632	1,857,918
Sacramento/Stockton	3,904,224	4,850,793	317,825	8,437,192	8,755,017	–	8,755,017
Modesto Briggsmore	880,876	378,852	199,504	1,060,224	1,259,728	–	1,259,728
Merced	238,882	420,656	49,269	610,268	659,538	–	659,538
Fresno	1,298,733	1,311,050	49,269	2,560,514	2,609,783	–	2,609,783
Bakersfield	1,355,841	1,913,107	–	3,268,948	3,268,948	–	3,268,948
Palmdale through Los Angeles Union Station	2,876,286	9,293,620	103,204	12,066,702	12,169,906	7,880,129	20,050,035
Orange County: Norwalk through Irvine	2,657,933	1,327,287	156,393	3,828,827	3,985,220	2,726,052	6,711,272
City of Industry through San Diego	6,095,217	14,601,461	389,863	20,306,816	20,696,679	7,966,193	28,662,872

	Annual Ridership for Regions
Bay Area	23,782,809
Sacramento/Stockton	8,755,017
San Joaquin Valley	7,797,997
Southern California	55,424,178

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**95,760,000**	**2.0%**
Revenue	**$3,160,000,000**	**2.0%**

Table A.7 P6 – Pacheco to San Jose, San Francisco, and Oakland via Transbay Tube

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,195,125	4,653,198	–	5,848,323	5,848,323	1,842,790	7,691,113
Oakland – 7th Street	1,026,151	3,258,329	–	4,284,480	4,284,480	885,786	5,170,265
Oakland – Airport	141,017	635,454	52,046	724,425	776,471	702,468	1,478,939
Union City	263,395	1,133,232	130,818	1,265,809	1,396,627	472,850	1,869,478
Warm Springs	81,586	267,967	46,771	302,781	349,552	244,583	594,135
San Jose	516,065	2,800,816	163,347	3,153,533	3,316,880	1,332,717	4,649,598
Morgan Hill	12,836	87,212	527	99,520	100,048	170,404	270,452
Gilroy	921,180	693,654	392,983	1,221,851	1,614,834	160,793	1,775,627
Sacramento/Stockton	3,650,608	4,552,974	413,028	7,790,554	8,203,582	–	8,203,582
Modesto Briggsmore	836,077	341,992	187,260	990,809	1,178,069	–	1,178,069
Merced	231,394	400,368	45,540	586,221	631,762	–	631,762
Fresno	1,239,259	1,226,071	45,540	2,419,789	2,465,330	–	2,465,330
Bakersfield	1,289,722	1,796,995	–	3,086,717	3,086,717	–	3,086,717
Palmdale through Los Angeles Union Station	2,726,967	8,800,705	96,883	11,430,788	11,527,671	7,880,129	19,407,800
Orange County: Norwalk through Irvine	2,492,056	1,207,081	150,336	3,548,802	3,699,137	2,726,052	6,425,190
City of Industry through San Diego	5,767,616	13,778,135	329,508	19,216,243	19,545,751	7,966,193	27,511,944

	Annual Ridership for Regions
Bay Area	23,499,606
Sacramento/Stockton	8,203,582
San Joaquin Valley	7,361,878
Southern California	53,344,934

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**92,410,000**	**-1.6%**
Revenue	**$3,049,000,000**	**-1.6%**

Table A.8 Pacheco Alignment and Station Alternatives

Alignment/Station Alternative Name and Description
NP1 – Pacheco to San Jose and San Francisco via GEA North P1 service using GEA north instead of Henry Miller. This adds Merced to local trains from Southern California to/from Bay Area.
NP2 – Pacheco to San Jose and San Francisco (King Street Station). P1 service terminating at 4th and King (Townsend St) rather than Transbay
NP3 – Pacheco to San Jose, Palo Alto, and San Francisco. P1 service eliminating Morgan Hill and substituting Palo Alto for Redwood City.
NP4 – Pacheco to San Jose and San Francisco – BNSF Alignment P1 service using BNSF alignment between Fresno and Merced.
NP5 – Pacheco to San Jose and San Francisco via downtown Modesto P1 using Modesto Downtown (13) instead of Briggsmore (40).
NP6 – Pacheco to San Jose and San Francisco via Castle AFB P1 using Castle rather than downtown Merced (14).
NP7 – Pacheco to San Jose and Oakland (12th Street Station) P2 using 12th Oakland City Center terminus instead of 7th Street; eliminates Warm Springs Station.

Table A.9 NP1 – Pacheco to San Jose and San Francisco via GEA North

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,082,912	7,462,429	535	9,544,806	9,545,341	1,523,915	11,069,256
Millbrae	111,910	476,375	–	588,284	588,284	628,285	1,216,570
Redwood City	308,778	1,164,432	141,717	1,331,493	1,473,210	519,716	1,992,926
San Jose	746,600	3,455,099	168,132	4,033,567	4,201,699	1,332,998	5,534,697
Morgan Hill	16,421	95,846	6,068	106,198	112,267	311,385	423,652
Gilroy	851,727	702,871	352,507	1,202,092	1,554,598	229,081	1,783,680
Sacramento/Stockton	3,947,002	5,220,309	265,942	8,901,370	9,167,311	–	9,167,311
Modesto Briggsmore	941,148	436,394	154,924	1,222,618	1,377,542	–	1,377,542
Merced	142,966	171,880	63,362	251,484	314,846	–	314,846
Fresno	1,236,182	1,212,622	49,976	2,398,829	2,448,805	–	2,448,805
Bakersfield	1,275,449	1,746,290	–	3,021,739	3,021,739	–	3,021,739
Palmdale through Los Angeles Union Station	2,742,947	8,748,587	97,809	11,393,724	11,491,534	7,880,129	19,371,662
Orange County: Norwalk through Irvine	2,523,233	1,190,312	143,858	3,569,686	3,713,545	2,726,052	6,439,597
City of Industry through San Diego	5,799,491	13,762,033	339,834	19,221,689	19,561,524	7,966,193	27,527,717

	Annual Ridership for Regions
Bay Area	22,020,780
Sacramento/Stockton	9,167,311
San Joaquin Valley	7,162,932
Southern California	53,338,976

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**91,690,000**	**-2.3%**
Revenue	**$3,066,000,000**	**-1.0%**

Table A.10 NP2 – Pacheco to San Jose and San Francisco (King Street Station)

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – King Street	2,162,578	7,985,117	–	10,147,695	10,147,695	511,438	10,659,133
Millbrae	100,011	468,883	43,975	524,919	568,894	146,690	715,584
Redwood City	284,447	1,213,307	150,666	1,347,088	1,497,755	166,126	1,663,881
San Jose	633,651	3,485,916	177,014	3,942,553	4,119,567	448,654	4,568,222
Morgan Hill	14,658	92,589	–	107,248	107,248	101,364	208,612
Gilroy	892,492	711,582	327,680	1,276,394	1,604,074	98,663	1,702,737
Sacramento/Stockton	3,933,647	4,867,888	315,063	8,486,472	8,801,535	–	8,801,535
Modesto Briggsmore	885,071	413,590	197,425	1,101,236	1,298,660	–	1,298,660
Merced	238,431	406,353	50,469	594,315	644,784	–	644,784
Fresno	1,291,609	1,300,330	50,469	2,541,470	2,591,939	–	2,591,939
Bakersfield	1,355,067	1,904,664	–	3,259,731	3,259,731	–	3,259,731
Palmdale through Los Angeles Union Station	2,878,613	9,247,781	101,310	12,025,084	12,126,394	7,880,129	20,006,522
Orange County: Norwalk through Irvine	2,623,112	1,272,312	150,295	3,745,129	3,895,424	2,726,052	6,621,476
City of Industry through San Diego	6,087,318	14,513,672	344,751	20,256,240	20,600,990	7,966,193	28,567,183

	Annual Ridership for Regions
Bay Area	19,518,169
Sacramento/Stockton	8,801,535
San Joaquin Valley	7,795,115
Southern California	55,195,182

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**91,310,000**	**-2.7%**
Revenue	**$3,079,000,000**	**-0.6%**

Table A.11 NP3 – Pacheco to San Jose, Palo Alto, and San Francisco

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,165,538	7,963,722	–	10,129,260	10,129,260	1,298,619	11,427,879
Millbrae	140,321	678,435	–	818,756	818,756	302,125	1,120,881
Palo Alto	303,997	1,315,391	155,268	1,464,120	1,619,389	373,483	1,992,871
San Jose	600,708	3,232,238	173,766	3,659,179	3,832,945	1,180,461	5,013,407
Gilroy	910,124	793,719	329,035	1,374,808	1,703,843	124,129	1,827,972
Sacramento/Stockton	3,955,142	4,874,048	275,597	8,553,593	8,829,190	–	8,829,190
Modesto Briggsmore	875,557	374,812	201,606	1,048,763	1,250,369	–	1,250,369
Merced	240,844	416,478	96,786	560,536	657,322	–	657,322
Fresno	1,312,589	1,297,641	50,822	2,559,408	2,610,230	–	2,610,230
Bakersfield	1,357,992	1,882,280	–	3,240,272	3,240,272	–	3,240,272
Palmdale through Los Angeles Union Station	2,900,774	9,289,577	107,062	12,083,289	12,190,351	7,880,129	20,070,480
Orange County: Norwalk through Irvine	2,647,785	1,261,019	151,532	3,757,273	3,908,805	2,726,052	6,634,857
City of Industry through San Diego	6,118,064	14,570,013	388,451	20,299,626	20,688,077	7,966,193	28,654,271

	Annual Ridership for Regions
Bay Area	21,383,010
Sacramento/Stockton	8,829,190
San Joaquin Valley	7,758,193
Southern California	55,359,607

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**93,330,000**	**-0.6%**
Revenue	**$3,090,000,000**	**-0.3%**

Table A.12 NP4 – Pacheco to San Jose, Palo Alto, and San Francisco

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,108,887	7,858,653	–	9,967,540	9,967,540	1,532,777	11,500,318
Millbrae	101,751	481,055	–	582,806	582,806	629,227	1,212,034
Palo Alto	279,400	1,152,686	147,364	1,284,722	1,432,086	520,815	1,952,901
San Jose	617,339	3,357,600	179,680	3,795,259	3,974,939	1,335,725	5,310,664
Morgan Hill	14,589	84,577	554	98,612	99,166	316,937	416,103
Gilroy	879,750	682,341	327,044	1,235,047	1,562,091	238,268	1,800,359
Sacramento/Stockton	3,877,989	4,740,195	434,704	8,183,481	8,618,185	–	8,618,185
Modesto Briggsmore	869,778	361,022	196,669	1,034,130	1,230,800	–	1,230,800
Merced	233,787	329,629	53,184	510,233	563,416	–	563,416
Fresno	1,283,430	1,290,632	53,184	2,520,878	2,574,061	–	2,574,061
Bakersfield	1,340,676	1,864,943	–	3,205,620	3,205,620	–	3,205,620
Palmdale through Los Angeles Union Station	2,860,848	9,174,953	103,782	11,932,019	12,035,801	7,880,129	19,915,930
Orange County: Norwalk through Irvine	2,612,841	1,266,440	139,792	3,739,490	3,879,282	2,726,052	6,605,334
City of Industry through San Diego	6,040,615	14,407,469	350,496	20,097,587	20,448,083	7,966,193	28,414,276

	Annual Ridership for Regions
Bay Area	22,192,378
Sacramento/Stockton	8,618,185
San Joaquin Valley	7,573,898
Southern California	54,935,540

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**93,320,000**	**-0.6%**
Revenue	**$3,079,000,000**	**-0.6%**

Table A.13 NP5 – Pacheco to San Jose and San Francisco via Downtown Modesto

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,149,097	7,936,342	-	10,085,439	10,085,439	1,669,864	11,755,303
Millbrae	110,701	476,045	-	586,746	586,746	591,534	1,178,280
Redwood City	277,015	1,184,371	147,977	1,313,409	1,461,386	557,585	2,018,971
San Jose	633,496	3,487,386	177,683	3,943,199	4,120,882	1,234,039	5,354,922
Morgan Hill	15,596	97,661	186	113,071	113,257	247,649	360,906
Gilroy	888,417	716,861	325,660	1,279,618	1,605,278	171,587	1,776,865
Sacramento/Stockton	3,913,984	4,809,090	471,976	8,251,098	8,723,074	-	8,723,074
Modesto Downtown	655,781	821,812	50,883	1,426,709	1,477,592	-	1,477,592
Merced	235,589	410,356	2,717	558,747	645,133	-	645,133
Fresno	1,288,057	1,301,763	1,273	2,588,547	2,589,820	-	2,589,820
Bakersfield	1,356,866	1,887,207	-	3,244,073	3,244,073	-	3,244,073
Palmdale through Los Angeles Union Station	2,850,491	9,224,917	100,705	11,974,702	12,075,408	7,880,129	19,955,536
Orange County: Norwalk through Irvine	2,643,641	1,283,088	135,201	3,791,527	3,926,729	2,726,052	6,652,781
City of Industry through San Diego	6,045,546	14,425,006	379,158	20,091,394	20,470,552	7,966,193	6,652,781

	Annual Ridership for Regions
Bay Area	22,445,246
Sacramento/Stockton	8,723,074
San Joaquin Valley	7,956,618
Southern California	55,045,063

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**94,170,000**	**0.3%**
Revenue	**$3,107,000,000**	**0.3%**

Table A.14 NP6 – Pacheco to San Jose and San Francisco via Castle Air Force Base

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,130,102	7,880,545	–	10,010,646	10,010,646	1,532,993	11,543,639
Millbrae	105,813	478,834	–	584,647	584,647	629,366	1,214,013
Redwood City	277,366	1,175,942	147,731	1,305,576	1,453,307	521,096	1,974,403
San Jose	629,520	3,468,363	177,462	3,920,421	4,097,883	1,336,506	5,434,389
Morgan Hill	14,588	97,503	–	112,091	112,091	317,831	429,922
Gilroy	883,434	712,065	325,194	1,270,305	1,595,499	238,958	1,834,457
Sacramento/Stockton	3,909,710	4,828,784	314,668	8,423,827	8,738,495	–	8,738,495
Modesto Briggsmore	876,970	418,080	206,455	1,088,595	1,295,050	–	1,295,050
Castle Air Force Base	228,430	393,335	44,689	577,076	621,764	–	621,764
Fresno	1,289,141	1,290,618	44,689	2,535,070	2,579,759	–	2,579,759
Bakersfield	1,343,617	1,878,035	–	3,221,652	3,221,652	–	3,221,652
Palmdale through Los Angeles Union Station	2,858,417	9,192,214	101,935	11,948,697	12,050,632	7,880,129	19,930,760
Orange County: Norwalk through Irvine	2,625,371	1,271,967	145,885	3,751,453	3,897,338	2,726,052	6,623,390
City of Industry through San Diego	6,041,289	14,410,825	382,070	20,070,044	20,452,114	7,966,193	28,418,307

	Annual Ridership for Regions
Bay Area	22,430,823
Sacramento/Stockton	8,738,495
San Joaquin Valley	7,718,225
Southern California	54,972,458

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**93,860,000**	**0.0%**
Revenue	**$3,098,000,000**	**0.0%**

Table A.15 NP7 – Pacheco to San Jose and Oakland (12th Street Station)

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 12th Street	1,755,460	6,366,369	–	8,121,829	8,121,829	1,212,807	9,334,636
Oakland – Airport	134,906	579,610	50,076	664,440	714,516	300,209	1,014,725
Union City	376,504	1,565,246	189,466	1,752,284	1,941,750	308,286	2,250,036
San Jose	566,531	3,053,510	178,629	3,441,412	3,620,041	989,811	4,609,851
Morgan Hill	12,145	97,723	–	109,868	109,868	143,204	253,072
Gilroy	879,131	603,153	418,171	1,064,113	1,482,285	122,282	1,604,567
Sacramento/Stockton	3,880,227	4,817,728	439,926	8,258,029	8,697,955	–	8,697,955
Modesto Briggsmore	884,922	330,607	199,598	1,015,931	1,215,529	–	1,215,529
Merced	244,230	431,466	49,145	626,551	675,696	–	675,696
Fresno	1,324,564	1,317,468	49,113	2,592,918	2,642,031	–	2,642,031
Bakersfield	1,354,196	1,888,538	–	3,242,734	3,242,734	–	3,242,734
Palmdale through Los Angeles Union Station	2,911,601	9,383,047	102,973	12,191,675	12,294,648	7,880,129	20,174,776
Orange County: Norwalk through Irvine	2,658,242	1,264,142	152,087	3,770,297	3,922,384	2,726,052	6,648,437
City of Industry through San Diego	6,123,342	14,666,418	349,911	20,439,849	20,789,760	7,966,193	28,755,953

	Annual Ridership for Regions
Bay Area	19,066,888
Sacramento/Stockton	8,697,955
San Joaquin Valley	7,775,991
Southern California	55,579,166

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**91,120,000**	**-3.0%**
Revenue	**$3,007,000,000**	**-2.9%**

Altamont Alternatives

Table A.16 Altamont Network Alternatives

Network Alternative Name and Description
A1 – Altamont to San Jose and San Francisco From San Francisco to Redwood City, this network alternative would use the existing Caltrain rail ROW, and would cross the San Francisco Bay in the Dumbarton corridor. To San Jose, the Niles/I-880 alignment would be utilized south of Niles. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A2 – Altamont to San Jose and Oakland From Oakland to San Jose, this network alternative would use the Niles/I-880 alignment. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A3 – Altamont to San Jose, Oakland, and San Francisco From Oakland to San Jose, this network alternative would use the Niles/I-880 Alignment. From San Francisco to Redwood City, this network alternative would use the existing Caltrain rail ROW. This network alternative would cross the San Francisco Bay in the Dumbarton corridor. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A4 – Altamont to San Jose From San Jose, this network alternative would use the Niles/I-880 alignment between San Jose and Niles. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A5 – Altamont to San Francisco From San Francisco to Redwood City, this network alternative would use the existing Caltrain rail ROW north of Redwood City and would cross the San Francisco Bay in the Dumbarton Corridor. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A6 – Altamont to Oakland From Oakland to Union City, this network alternative would use the Niles/I-800 alignment north of Niles. The Altamont Pass would use the UPRR alignment through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A7 – Altamont to Union City From Union City, the Altamont Pass alignment would follow the UPRR through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A8 – Altamont to San Jose and San Francisco – Peninsula Route This network alternative would cross the San Francisco Bay in the Dumbarton corridor. From San Francisco to San Jose, this network alternative would use the existing Caltrain alignment The Altamont Pass alignment would follow the UPRR through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A9 – Altamont to San Jose, San Francisco, and Oakland – No Bay Crossing Route This network alternative would not cross the San Francisco Bay. From San Francisco to San Jose, this network alternative would use the existing Caltrain ROW and the Niles/I-880 alignment south of Niles in the East Bay. The Altamont Pass alignment would follow the UPRR through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A10 – Altamont to Oakland and San Francisco via Transbay Tube

Network Alternative Name and Description
From San Francisco to Oakland, this network alternative would use a new Transbay tube between San Francisco and Oakland and would use the Niles/I-880 Alignment north of Shinn. The Altamont Pass alignment would follow the UPRR through downtown Tracy, and the Central Valley would use the UPRR N/S alignment.
A11 – Altamont to San Jose, Oakland, and San Francisco via Transbay Tube From San Francisco to Oakland this network alternative would use a new Transbay tube. The Niles/I-880 alignment would be used between Oakland and San Jose, with the UPRR Alignment through the Tri-Valley to Tracy, and the UPRR N/S alignment through the Central Valley.

Table A.17 A1 – Altamont to San Jose and San Francisco

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,896,607	5,447,852	104,407	7,240,052	7,344,459	1,892,007	9,236,466
Millbrae	127,687	388,351	26,278	489,760	516,038	415,125	931,163
Redwood City	187,650	588,523	46,560	729,614	776,173	378,863	1,155,036
Warm Springs	90,121	126,276	57,671	158,727	216,397	160,662	377,059
San Jose	542,669	1,368,577	93,296	1,817,949	1,911,245	739,045	2,650,290
Bernal	1,125,019	2,424,285	198,056	3,351,249	3,549,305	1,215,779	4,765,083
Sacramento/Stockton	4,330,416	4,417,010	390,644	8,356,783	8,747,427	–	8,747,427
Tracy Downtown	442,318	361,191	381,120	422,389	803,510	–	803,510
Modesto Downtown	1,315,315	274,068	233,505	1,355,878	1,589,383	–	1,589,383
Merced	447,256	223,981	321,333	349,904	671,237	–	671,237
Fresno	1,484,623	1,038,425	270,364	2,252,684	2,523,049	–	2,523,049
Bakersfield	1,232,248	1,515,311	–	2,747,559	2,747,559	–	2,747,559
Palmdale through Los Angeles Union Station	2,697,295	8,115,871	101,232	10,711,934	10,813,166	7,880,129	18,693,294
Orange County: Norwalk through Irvine	2,511,585	1,027,491	138,445	3,400,631	3,539,076	2,726,052	6,265,128
City of Industry through San Diego	5,679,064	13,109,059	349,904	18,438,219	18,788,123	7,966,193	26,754,316

	Total Annual Ridership for Regions
Bay Area	19,115,098
Sacramento/Stockton	9,550,936
San Joaquin Valley	7,531,228
Southern California	51,712,738

	Total Annual Ridership	Percentage Deviation from P1
Total Ridership	**87,910,000**	**-6.4%**
Revenue	**$2,844,000,000**	**-8.2%**

Table A.18 A2 – Altamont to San Jose and Oakland

	Business/ Commute	Recreational/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 7th Street	2,887,758	6,994,365	146,392	9,735,730	9,882,123	137,879	10,020,002
Oakland – Airport	152,197	430,107	52,607	529,697	582,304	364,434	946,739
Union City	427,023	1,027,649	72,743	1,381,930	1,454,673	107,945	1,562,618
San Jose	593,370	1,517,257	105,032	2,005,594	2,110,627	545,193	2,655,820
Bernal	538,949	1,087,331	124,080	1,502,200	1,626,280	324,894	1,951,174
Sacramento/Stockton	4,644,648	4,479,934	368,430	8,756,153	9,124,583	-	9,124,583
Tracy Downtown	482,895	349,564	431,377	401,083	832,459	-	832,459
Modesto Downtown	1,387,372	275,552	204,623	1,458,301	1,662,923	-	1,662,923
Merced	458,406	226,391	330,698	354,099	684,797	-	684,797
Fresno	1,535,397	1,092,047	279,542	2,347,902	2,627,444	-	2,627,444
Bakersfield	1,292,317	1,622,833	-	2,915,150	2,915,150	-	2,915,150
Palmdale through Los Angeles Union Station	2,797,782	8,490,397	101,949	11,186,231	11,288,179	7,880,129	19,168,308
Orange County: Norwalk through Irvine	2,576,470	1,071,186	157,277	3,490,380	3,647,656	2,726,052	6,373,709
City of Industry through San Diego	5,890,345	13,627,737	394,915	19,123,166	19,518,081	7,966,193	27,484,274

	Total Annual Ridership for Regions
Bay Area	17,136,352
Sacramento/Stockton	9,957,042
San Joaquin Valley	7,890,315
Southern California	53,026,291

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**88,010,000**	**0.1%**
Revenue	**$2,881,000,000**	**1.3%**

Table A.19 A3 – Altamont to San Jose, Oakland, and San Francisco

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	962,735	2,765,378	52,998	3,675,115	3,728,113	670,159	4,398,272
Millbrae	94,342	286,934	19,416	361,860	381,276	102,882	484,158
Redwood City	82,221	257,867	20,401	319,687	340,087	124,207	464,294
Oakland – 7th Street	1,016,720	2,462,570	51,542	3,427,748	3,479,290	38,576	3,517,865
Oakland – Airport	63,808	180,321	22,055	222,073	244,129	92,729	336,858
Union City	90,133	216,910	15,354	291,689	307,043	46,940	353,983
San Jose	277,283	1,483,184	90,924	1,669,543	1,760,467	404,041	2,164,508
Bernal	542,585	1,080,947	127,347	1,496,185	1,623,532	944,032	2,567,565
Sacramento/Stockton	4,131,159	4,213,768	372,669	7,972,258	8,344,927	–	8,344,927
Tracy Downtown	473,628	361,317	421,696	413,249	834,945	–	834,945
Modesto Downtown	418,266	209,463	300,505	327,224	627,728	–	627,728
Merced	406,720	203,681	292,210	318,191	610,401	–	610,401
Fresno	1,388,934	971,494	252,938	2,107,490	2,360,428	–	2,360,428
Bakersfield	1,160,277	1,426,807	–	2,587,084	2,587,084	–	2,587,084
Palmdale through Los Angeles Union Station	2,662,986	8,012,639	99,945	10,575,681	10,675,626	7,880,129	18,555,754
Orange County: Norwalk through Irvine	2,456,018	1,004,758	135,382	3,325,394	3,460,776	2,726,052	6,186,828
City of Industry through San Diego	5,673,044	13,095,163	349,533	18,418,673	18,768,207	7,966,193	26,734,400

	Total Annual Ridership for Regions
Bay Area	14,287,504
Sacramento/Stockton	9,179,872
San Joaquin Valley	6,185,642
Southern California	51,476,982

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**81,130,000**	**-7.7%**
Revenue	**$2,625,000,000**	**-7.7%**

Table A.20 A4 – Altamont to San Jose

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Jose	1,245,336	3,681,775	141,150	4,785,961	4,927,111	289,237	5,216,348
Warm Springs	505,986	1,559,591	51,311	2,014,267	2,065,578	123,107	2,188,685
Bernal	2,860,986	8,695,622	142,428	11,414,179	11,556,608	215,456	11,772,063
Sacramento/Stockton	4,888,217	5,516,363	404,460	10,000,120	10,404,581	–	10,404,581
Tracy Downtown	348,219	386,748	280,840	454,128	734,967	–	734,967
Modesto Downtown	1,373,339	278,283	133,298	1,518,324	1,651,622	–	1,651,622
Merced	451,023	335,802	329,046	457,780	786,826	–	786,826
Fresno	1,502,803	1,281,308	275,909	2,508,201	2,784,111	–	2,784,111
Bakersfield	1,341,201	1,935,566	–	3,276,767	3,276,767	–	3,276,767
Palmdale through Los Angeles Union Station	2,937,861	9,431,685	100,796	12,268,750	12,369,545	7,880,129	20,249,674
Orange County: Norwalk through Irvine	2,747,956	1,368,409	146,628	3,969,736	4,116,365	2,726,052	6,842,417
City of Industry through San Diego	6,056,861	14,718,884	337,263	20,438,482	20,775,745	7,966,193	28,741,938

	Total Annual Ridership for Regions
Bay Area	19,177,096
Sacramento/Stockton	11,139,548
San Joaquin Valley	8,499,326
Southern California	55,834,029

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**94,650,000**	**7.7%**
Revenue	**$3,176,000,000**	**11.7%**

Table A.21 A5 – Altamont to San Francisco

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,340,549	6,824,578	115,371	9,049,756	9,165,127	153,417	9,318,544
Millbrae	174,621	551,280	27,417	698,485	725,901	43,680	769,581
Redwood City	982,037	2,824,116	132,668	3,673,485	3,806,153	102,021	3,908,174
Bernal	1,582,999	3,424,525	330,290	4,677,234	5,007,524	92,163	5,099,687
Sacramento/Stockton	5,181,593	5,431,105	453,389	10,159,309	10,612,698	–	10,612,698
Tracy Downtown	437,013	393,220	373,531	456,702	830,233	–	830,233
Modesto Downtown	1,512,157	327,346	284,656	1,554,846	1,839,502	–	1,839,502
Merced	463,878	346,850	329,186	481,542	810,728	–	810,728
Fresno	1,555,398	1,263,933	277,664	2,541,667	2,819,331	–	2,819,331
Bakersfield	1,325,207	1,811,166	–	3,136,373	3,136,373	–	3,136,373
Palmdale through Los Angeles Union Station	2,869,565	9,124,462	102,675	11,891,352	11,994,027	7,880,129	19,874,156
Orange County: Norwalk through Irvine	2,569,636	1,211,124	155,485	3,625,275	3,780,760	2,726,052	6,506,812
City of Industry through San Diego	5,986,433	14,401,554	378,499	20,009,488	20,387,988	7,966,193	28,354,181

	Total Annual Ridership for Regions
Bay Area	19,095,986
Sacramento/Stockton	11,442,931
San Joaquin Valley	8,605,935
Southern California	54,735,149

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**93,880,000**	**6.8%**
Revenue	**$3,127,000,000**	**10.0%**

Table A.22 A6 – Altamont to Oakland

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 7th Street	3,441,733	8,282,204	154,322	11,569,614	11,723,937	62,313	11,786,250
Oakland – Airport	223,558	563,723	27,330	759,951	787,280	122,549	909,829
Union City	1,473,258	3,728,695	144,301	5,057,652	5,201,954	41,457	5,243,410
Bernal	529,287	1,044,727	124,806	1,449,208	1,574,014	157,786	1,731,800
Sacramento/Stockton	5,431,160	5,187,013	359,296	10,258,877	10,618,173	–	10,618,173
Tracy Downtown	454,768	366,766	402,295	419,239	821,534	–	821,534
Modesto Downtown	1,553,790	303,907	178,919	1,678,778	1,857,697	–	1,857,697
Merced	455,679	341,258	323,220	473,716	796,937	–	796,937
Fresno	1,553,790	1,251,887	275,484	2,530,193	2,805,677	–	2,805,677
Bakersfield	1,334,787	1,828,910	–	3,163,697	3,163,697	–	3,163,697
Palmdale through Los Angeles Union Station	2,872,362	9,160,584	104,764	11,928,181	12,032,946	7,880,129	19,913,074
Orange County: Norwalk through Irvine	2,543,129	1,179,190	148,492	3,573,827	3,722,318	2,726,052	6,448,371
City of Industry through San Diego	5,968,646	14,358,711	338,343	19,989,014	20,327,357	7,966,193	28,293,550

	Total Annual Ridership for Regions
Bay Area	19,671,289
Sacramento/Stockton	11,439,707
San Joaquin Valley	8,624,009
Southern California	54,654,995

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**94,390,000**	**7.4%**
Revenue	**$3,153,000,000**	**10.9%**

Table A.23 A7 – Altamont to Union City

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Union City	2,602,380	8,718,573	177,880	11,462,222	11,636,819	17,024	11,824,907
Bernal	1,164,354	2,690,841	156,760	3,698,436	3,855,195	17,024	3,928,305
Sacramento/Stockton	4,928,461	5,387,312	349,340	9,966,433	10,315,773	-	10,468,195
Tracy Downtown	303,626	375,950	243,071	436,505	679,576	-	689,617
Modesto Downtown	1,322,649	268,999	191,045	1,400,602	1,591,648	-	1,615,165
Merced	419,106	304,308	304,479	418,935	723,414	-	734,103
Fresno	1,133,140	912,970	200,904	1,845,206	2,046,110	-	2,076,343
Bakersfield	973,427	1,333,778	-	2,307,205	2,307,205	-	2,341,296
Palmdale through Los Angeles Union Station	2,525,699	8,055,000	92,120	10,488,579	10,580,699	7,880,129	18,211,140
Orange County: Norwalk through Irvine	2,236,201	1,036,874	130,571	3,142,504	3,273,075	2,726,052	5,907,029
City of Industry through San Diego	5,248,294	12,625,770	297,509	17,576,556	17,874,064	7,966,193	25,693,900

	Total Annual Ridership for Regions
Bay Area	15,526,062
Sacramento/Stockton	10,995,349
San Joaquin Valley	6,668,377
Southern California	50,300,212

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**83,490,000**	**-5.0%**
Revenue	**$2,701,000,000**	**-5.0%**

Table A.24 A8 – Altamont to San Jose and San Francisco – Peninsula Route

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,621,292	4,962,161	–	6,583,453	6,583,453	2,022,465	8,605,918
Millbrae	132,397	468,225	31,121	569,500	600,622	564,743	1,165,364
Palo Alto	484,049	1,404,498	47,649	1,840,898	1,888,547	1,164,814	3,053,361
Shinn	435,169	809,327	165,276	1,079,220	1,244,496	418,129	1,662,626
San Jose	412,839	1,211,617	59,957	1,564,500	1,624,456	1,050,809	2,675,266
Bernal	944,361	2,116,066	163,694	2,896,733	3,060,427	1,136,201	4,196,629
Sacramento/Stockton	4,480,047	4,746,071	399,301	8,826,817	9,226,118	–	9,226,118
Tracy Downtown	419,169	360,267	271,300	508,137	779,437	–	779,437
Modesto Downtown	1,396,234	267,256	257,058	1,406,432	1,663,490	–	1,663,490
Merced	449,060	252,134	323,344	377,850	701,194	–	701,194
Fresno	1,457,773	1,072,011	270,069	2,259,716	2,529,785	–	2,529,785
Bakersfield	1,200,364	1,546,390	3,165	2,743,589	2,746,754	–	2,746,754
Palmdale through Los Angeles Union Station	2,669,215	8,222,327	96,528	10,795,013	10,891,542	7,880,129	18,771,670
Orange County: Norwalk through Irvine	2,456,817	980,230	139,957	3,297,089	3,437,047	2,726,052	6,163,099
City of Industry through San Diego	5,642,608	13,200,489	333,366	18,509,731	18,843,097	7,966,193	26,809,290

	Total Annual Ridership for Regions
Bay Area	21,359,163
Sacramento/Stockton	10,005,555
San Joaquin Valley	7,641,222
Southern California	51,744,060

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**90,750,000**	**3.2%**
Revenue	**$2,743,000,000**	**-3.6%**

Table A.25 A9 – Altamont to San Jose, San Francisco, and Oakland – No Bay Crossing Route

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	434,978	2,066,682	32,731	2,468,930	2,501,660	1,264,710	3,766,371
Millbrae	39,885	103,200	12,699	130,386	143,085	435,587	578,672
Redwood City	51,511	151,849	15,382	187,978	203,359	401,080	604,440
Oakland – 7th Street	1,525,821	3,901,209	54,372	5,372,659	5,427,031	137,433	5,564,464
Oakland – Airport	151,849	401,711	65,998	487,562	553,560	233,494	787,054
Union City	217,489	404,751	88,891	533,349	622,240	109,971	732,211
San Jose	587,542	1,588,600	103,200	2,072,942	2,176,142	1,341,105	3,517,247
Bernal	526,195	1,060,259	122,695	1,463,758	1,586,454	359,981	1,946,435
Sacramento/Stockton	4,125,316	3,938,054	348,948	7,714,422	8,063,370	-	8,063,370
Tracy Downtown	403,857	345,729	350,200	399,386	749,586	-	749,586
Modesto Downtown	1,248,773	238,236	223,570	1,263,440	1,487,010	-	1,487,010
Merced	452,685	212,839	326,949	338,575	665,524	-	665,524
Fresno	1,461,970	1,027,171	276,154	2,212,987	2,489,140	-	2,489,140
Bakersfield	1,214,970	1,451,775	-	2,666,745	2,666,745	-	2,666,745
Palmdale through Los Angeles Union Station	2,683,378	8,065,695	100,159	10,648,914	10,749,073	7,880,129	18,629,202
Orange County: Norwalk through Irvine	2,493,254	1,001,594	141,117	3,353,731	3,494,848	2,726,052	6,220,901
City of Industry through San Diego	5,701,575	13,083,861	335,176	18,450,260	18,785,436	7,966,193	26,751,629

	Total Annual Ridership for Regions
Bay Area	17,496,894
Sacramento/Stockton	8,812,956
San Joaquin Valley	7,308,418
Southern California	51,601,732

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**85,220,000**	**-3.1%**
Revenue	**$2,733,000,000**	**-3.9%**

Table A.26 A10 – Altamont to Oakland and San Francisco via Transbay Tube

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,786,578	4,927,385	95,361	6,618,602	6,713,963	2,258,631	8,972,594
Oakland – 7th Street	1,375,498	3,210,541	54,218	4,531,820	4,586,038	805,548	5,391,586
Oakland – Airport	213,037	539,739	55,090	697,686	752,776	571,353	1,324,128
Union City	1,353,357	3,376,681	135,458	4,594,581	4,730,039	292,978	5,023,017
Bernal	511,148	1,004,689	122,383	1,393,454	1,515,837	1,563,171	3,079,008
Sacramento/Stockton	5,037,216	5,042,271	342,393	9,737,094	10,079,487	–	10,079,487
Tracy Downtown	433,744	349,715	384,756	398,703	783,458	–	783,458
Modesto Downtown	1,477,309	296,543	173,811	1,600,040	1,773,852	–	1,773,852
Merced	437,579	327,051	311,012	453,618	764,630	–	764,630
Fresno	1,491,256	1,203,604	263,593	2,431,266	2,694,860	–	2,694,860
Bakersfield	1,271,246	1,739,682	–	3,010,928	3,010,928	–	3,010,928
Palmdale through Los Angeles Union Station	2,745,068	8,727,001	99,719	11,372,350	11,472,069	7,880,129	19,352,198
Orange County: Norwalk through Irvine	2,435,973	1,138,054	141,211	3,432,817	3,574,028	2,726,052	6,300,080
City of Industry through San Diego	5,708,403	13,715,578	323,739	19,100,242	19,423,981	7,966,193	27,390,174

	Total Annual Ridership for Regions
Bay Area	23,790,333
Sacramento/Stockton	10,862,945
San Joaquin Valley	8,244,270
Southern California	53,042,452

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**95,940,000**	**9.1%**
Revenue	**$3,164,000,000**	**11.3%**

Table A.27 A11 – Altamont to San Jose, Oakland, and San Francisco via Transbay Tube

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,487,672	4,099,943	89,940	5,497,675	5,587,615	2,319,863	7,907,478
Oakland – 7th Street	1,177,936	2,706,220	49,153	3,835,003	3,884,157	471,408	4,355,565
Oakland – Airport	153,038	413,097	49,676	516,458	566,134	578,602	1,144,736
Union City	378,759	841,881	69,024	1,151,617	1,220,640	322,645	1,543,286
San Jose	567,703	1,469,021	100,573	1,936,152	2,036,725	936,973	2,973,698
Bernal	514,890	1,050,695	117,654	1,447,931	1,565,585	1,503,705	3,069,290
Sacramento/Stockton	4,348,847	4,401,486	349,476	8,400,857	8,750,333	–	8,750,333
Tracy Downtown	458,067	335,707	408,739	385,034	793,774	–	793,774
Modesto Downtown	1,327,836	268,600	196,962	1,399,475	1,596,436	–	1,596,436
Merced	442,554	217,704	317,231	343,027	660,258	–	660,258
Fresno	1,481,745	1,051,218	268,252	2,264,712	2,532,964	–	2,532,964
Bakersfield	1,239,116	1,535,779	–	2,774,896	2,774,896	–	2,774,896
Palmdale through Los Angeles Union Station	2,691,928	8,092,341	95,866	10,688,403	10,784,269	7,880,129	18,664,398
Orange County: Norwalk through Irvine	2,474,747	1,028,210	141,185	3,361,772	3,502,957	2,726,052	6,229,009
City of Industry through San Diego	5,639,383	13,018,304	349,476	18,308,210	18,657,687	7,966,193	26,623,880

	Total Annual Ridership for Regions
Bay Area	20,994,053
Sacramento/Stockton	9,544,107
San Joaquin Valley	7,564,554
Southern California	51,517,287

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**89,620,000**	**1.9%**
Revenue	**$2,884,000,000**	**1.4%**

Table A.28 Altamont Pass Alignment and Station Alternatives

Alignment and Station Alternative Name and Description
NA1 – Altamont to San Jose and San Francisco via Pleasanton BART Pleasanton Bart Station instead of Bernal/I-680.
NA2 – Altamont to San Jose and San Francisco via I-580/UPRR station I-580/UPRR station instead of Bernal/I-680.
NA3 – Altamont to San Jose and San Francisco via Tracy ACE station A1 using Trace ACE instead of Tracy downtown.
NA4 – Altamont to San Jose and San Francisco via Livermore downtown station A1 using Livermore downtown (34) instead of Pleasanton Bernal/I-680 (35).
NA5 – Altamont to San Jose and San Francisco via Briggsmore station. A1 using Briggsmore/Modesto (40) rather than downtown Modesto (13).
NA6 – Altamont to San Jose and San Francisco via the Fremont Bridge A1 using Fremont Bridge instead of Dumbarton Bridge.
NA7 – Altamont to San Jose and San Francisco (King St station) A1 terminating at 4th and King (Townsend St) instead of Transbay Transit Center.
NA8 – Altamont to San Jose and Oakland (12th St station) A2 termination at Oakland 12th St City Center instead of West Oakland.
NA9 – Altamont to San Jose and Oakland – BNSF alignment A1 using BNSF alignment instead of UP alignment between Merced and Fresno.

Table A.29 NA1 – Altamont to San Jose and San Francisco via Pleasanton Bart

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,639,673	5,060,942	85,119	6,615,496	6,700,615	2,054,027	8,754,641
Millbrae	103,185	354,374	23,451	434,108	457,559	446,873	904,432
Redwood City	159,294	538,509	41,865	655,939	697,803	390,240	1,088,043
Warm Springs	74,523	100,580	36,306	138,796	175,102	216,281	391,383
San Jose	479,273	1,319,521	77,997	1,720,797	1,798,794	781,425	2,580,218
Dublin	1,277,135	2,757,687	251,362	3,783,460	4,034,822	1,480,838	5,515,660
Sacramento/Stockton	4,199,501	4,214,267	377,651	8,036,117	8,413,768	–	8,413,768
Tracy Downtown	380,257	220,441	347,078	253,620	600,698	–	600,698
Modesto Downtown	1,275,745	255,357	246,324	1,284,778	1,531,103	–	1,531,103
Merced	437,756	217,488	315,983	339,261	655,244	–	655,244
Fresno	1,445,115	1,014,655	267,865	2,191,905	2,459,770	–	2,459,770
Bakersfield	1,200,875	1,470,129	–	2,671,004	2,671,004	–	2,671,004
Palmdale through Los Angeles Union Station	2,627,403	7,922,162	96,237	10,453,327	10,549,564	7,880,129	18,429,693
Orange County: Norwalk through Irvine	2,458,033	989,988	138,275	3,309,746	3,448,021	2,726,052	6,174,073
City of Industry through San Diego	5,570,788	12,823,288	353,331	18,040,745	18,394,076	7,966,193	26,360,269

	Total Annual Ridership for Regions
Bay Area	19,234,378
Sacramento/Stockton	9,014,466
San Joaquin Valley	7,317,121
Southern California	50,964,035

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**86,530,000**	**-1.6%**
Revenue	**$2,806,000,000**	**-1.3%**

Table A.30 NA2 – Altamont to San Jose and San Francisco via I-580/UPRR Station

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,834,612	5,613,149	–	7,447,761	7,447,761	1,171,865	8,619,626
Millbrae	104,860	361,760	22,076	444,544	466,620	422,166	888,786
Redwood City	156,133	552,075	38,989	669,220	708,208	369,307	1,077,515
Warm Springs	124,622	157,558	73,171	209,009	282,180	190,932	473,111
San Jose	511,840	1,340,576	86,523	1,765,892	1,852,416	556,775	2,409,190
Livermore/I-580	801,141	2,193,345	131,565	2,862,921	2,994,486	413,582	3,408,068
Sacramento/Stockton	4,157,743	4,241,061	360,157	8,038,647	8,398,804	–	8,398,804
Tracy Downtown	358,555	52,519	254,763	156,311	411,074	–	411,074
Modesto Downtown	1,252,272	304,968	220,225	1,337,015	1,557,240	–	1,557,240
Merced	450,241	249,956	327,934	372,263	700,197	–	700,197
Fresno	1,468,402	1,032,225	272,032	2,228,596	2,500,627	–	2,500,627
Bakersfield	1,209,189	1,471,429	–	2,680,617	2,680,617	–	2,680,617
Palmdale through Los Angeles Union Station	2,677,947	7,846,195	96,315	10,427,827	10,524,142	7,880,129	18,404,270
Orange County: Norwalk through Irvine	2,494,930	1,128,006	141,001	3,481,936	3,622,937	2,726,052	6,348,989
City of Industry through San Diego	5,660,861	13,004,830	331,672	18,334,018	18,665,691	7,966,193	26,631,884

	Total Annual Ridership for Regions
Bay Area	16,876,297
Sacramento/Stockton	8,809,878
San Joaquin Valley	7,438,681
Southern California	51,385,143

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**84,510,000**	**-3.9%**
Revenue	**$2,693,000,000**	**-5.3%**

Table A.31 NA3 – Altamont to San Jose and San Francisco via Tracy Ace Station

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,909,861	5,397,685	112,737	7,194,810	7,307,546	1,889,934	9,197,480
Millbrae	125,886	383,796	30,858	478,824	509,682	415,388	925,070
Redwood City	194,966	581,392	52,073	724,285	776,358	379,392	1,155,750
Warm Springs	93,450	126,588	61,891	158,147	220,038	161,304	381,343
San Jose	544,923	1,358,801	101,165	1,802,560	1,903,725	741,764	2,645,489
Bernal	1,193,291	2,712,518	217,584	3,688,225	3,905,809	1,219,633	5,125,442
Sacramento/Stockton	4,315,729	4,400,237	371,347	8,344,619	8,715,966	–	8,715,966
Tracy ACE	460,765	115,893	321,203	255,455	576,658	–	576,658
Modesto Downtown	1,311,813	270,708	244,760	1,337,762	1,582,521	–	1,582,521
Merced	446,213	226,876	324,885	348,204	673,089	–	673,089
Fresno	1,471,713	1,058,112	269,130	2,260,695	2,529,825	–	2,529,825
Bakersfield	1,223,097	1,516,773	–	2,739,870	2,739,870	–	2,739,870
Palmdale through Los Angeles Union Station	2,671,667	8,056,202	100,639	10,627,230	10,727,869	7,880,129	18,607,997
Orange County: Norwalk through Irvine	2,501,071	1,029,358	136,581	3,393,848	3,530,429	2,726,052	6,256,481
City of Industry through San Diego	5,625,788	13,015,038	347,152	18,293,675	18,640,827	7,966,193	26,607,020

	Total Annual Ridership for Regions
Bay Area	19,430,573
Sacramento/Stockton	9,292,624
San Joaquin Valley	7,525,305
Southern California	51,471,498

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**87,720,000**	**-0.2%**
Revenue	**$2,846,000,000**	**0.1%**

Table A.32 NA4 – Altamont to San Jose and San Francisco via Livermore Downtown Station

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,030,776	5,725,034	108,515	7,647,296	7,755,810	1,800,483	9,556,293
Millbrae	122,784	383,149	24,310	481,622	505,932	456,027	961,960
Redwood City	187,435	597,360	44,921	739,873	784,794	404,668	1,189,462
Warm Springs	128,773	179,331	80,858	227,247	308,104	150,931	459,036
San Jose	536,584	1,346,922	90,723	1,792,784	1,883,506	1,025,957	2,909,463
Livermore Downtown	776,162	1,943,225	132,825	2,586,562	2,719,387	795,156	3,514,543
Sacramento/Stockton	4,275,939	4,281,753	349,502	8,208,190	8,557,692	–	8,557,692
Tracy Downtown	397,594	79,448	280,271	196,771	477,042	–	477,042
Modesto Downtown	1,327,016	292,778	212,097	1,407,697	1,619,794	–	1,619,794
Merced	469,467	256,842	320,788	405,521	726,309	–	726,309
Fresno	1,498,596	1,025,077	267,235	2,256,438	2,523,673	–	2,523,673
Bakersfield	1,211,983	1,484,855	–	2,696,838	2,696,838	–	2,696,838
Palmdale through Los Angeles Union Station	2,685,036	7,783,644	94,246	10,374,434	10,468,679	7,880,129	18,348,808
Orange County: Norwalk through Irvine	2,607,349	1,125,664	136,877	3,596,137	3,733,013	2,726,052	6,459,066
City of Industry through San Diego	5,617,048	12,916,779	357,077	18,176,750	18,533,827	7,966,193	26,500,021

	Total Annual Ridership for Regions
Bay Area	18,590,757
Sacramento/Stockton	9,034,734
San Joaquin Valley	7,566,614
Southern California	51,307,894

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**86,500,000**	**-1.6%**
Revenue	**$2,786,000,000**	**-2.0%**

Table A.33 NA5 – Altamont to San Jose and San Francisco via Briggsmore Station

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,887,778	5,422,492	103,921	7,206,349	1,892,007	7,310,270	9,202,277
Millbrae	127,245	387,008	26,187	488,066	415,125	514,253	929,378
Redwood City	186,777	585,784	46,343	726,217	378,863	772,560	1,151,423
Warm Springs	89,776	125,792	57,450	158,118	160,662	215,568	376,230
San Jose	540,143	1,362,206	92,862	1,809,487	739,045	1,902,348	2,641,393
Bernal	1,120,709	2,414,996	197,297	3,338,408	1,215,779	3,535,705	4,751,483
Sacramento/Stockton	4,344,907	4,431,791	391,951	8,384,746	-	8,776,697	8,776,697
Tracy Downtown	443,798	362,400	382,396	423,803	-	806,198	806,198
Modesto Briggsmore	1,151,548	239,944	204,431	1,187,061	-	1,391,492	1,391,492
Merced	445,216	222,959	319,868	348,308	-	668,176	668,176
Fresno	1,478,907	1,034,427	269,323	2,244,010	-	2,513,334	2,513,334
Bakersfield	1,222,755	1,503,637	-	2,726,392	-	2,726,392	2,726,392
Palmdale through Los Angeles Union Station	2,693,204	8,103,561	101,079	10,695,686	7,880,129	10,796,765	18,676,894
Orange County: Norwalk through Irvine	2,490,403	1,018,825	137,277	3,371,950	2,726,052	3,509,228	6,235,280
City of Industry through San Diego	5,678,773	13,108,387	349,886	18,437,274	7,966,193	18,787,160	26,753,353

	Total Annual Ridership for Regions
Bay Area	19,052,185
Sacramento/Stockton	9,582,896
San Joaquin Valley	7,299,393
Southern California	51,665,527

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**87,600,000**	**-0.4%**
Revenue	**$2,834,000,000**	**-0.4%**

Table A.34 NA6 – Altamont to San Jose and San Francisco via the Fremont Bridge

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,883,561	5,336,406	103,942	7,116,024	7,219,966	2,036,003	9,255,969
Millbrae	125,291	381,647	25,023	481,914	506,938	445,921	952,858
Redwood City	188,286	596,181	44,272	740,195	784,467	403,862	1,188,329
Warm Springs	93,268	113,742	62,120	144,889	207,010	161,089	368,099
San Jose	531,961	1,318,528	92,043	1,758,445	1,850,488	936,210	2,786,699
Bernal	1,143,190	2,391,898	200,010	3,335,078	3,535,089	1,218,282	4,753,371
Sacramento/Stockton	4,410,724	4,324,805	373,772	8,361,757	8,735,529	–	8,735,529
Tracy Downtown	440,092	378,672	383,747	435,018	818,764	–	818,764
Modesto Downtown	1,337,426	292,228	238,682	1,390,972	1,629,655	–	1,629,655
Merced	466,691	267,030	315,152	418,569	733,721	–	733,721
Fresno	1,507,164	1,034,524	266,330	2,275,357	2,541,687	–	2,541,687
Bakersfield	1,218,785	1,509,263	–	2,728,048	2,728,048	–	2,728,048
Palmdale through Los Angeles Union Station	2,687,101	7,824,897	93,268	10,418,730	10,511,998	7,880,129	18,392,127
Orange County: Norwalk through Irvine	2,610,457	1,158,064	133,690	3,634,831	3,768,521	2,726,052	6,494,574
City of Industry through San Diego	5,614,810	12,949,568	325,651	18,238,727	18,564,378	7,966,193	26,530,571

	Total Annual Ridership for Regions
Bay Area	19,305,324
Sacramento/Stockton	9,554,294
San Joaquin Valley	7,633,111
Southern California	51,417,271

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**87,910,000**	**0.0%**
Revenue	**$2,843,000,000**	**0.0%**

Table A.35 NA7 – Altamont to San Jose and San Francisco (King Street Station)

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – King Street	1,572,007	5,804,489	–	7,376,495	7,376,495	579,475	7,964,141
Millbrae	87,695	411,143	38,560	460,278	498,838	102,944	602,058
Redwood City	150,804	643,254	79,878	714,180	794,058	112,878	907,596
Warm Springs	94,107	131,861	60,221	165,747	225,968	168,741	394,306
San Jose	470,661	1,186,977	80,916	1,576,722	1,657,638	644,700	2,301,945
Bernal	1,174,775	2,531,503	206,815	3,499,463	3,706,278	1,276,917	4,983,031
Sacramento/Stockton	4,305,426	4,391,520	388,390	8,308,556	8,696,946	–	8,709,538
Tracy Downtown	439,766	359,107	378,921	419,952	798,873	–	800,029
Modesto Downtown	1,307,724	272,486	232,157	1,348,054	1,580,211	–	1,582,499
Merced	444,675	222,688	319,479	347,885	667,364	–	668,330
Fresno	1,476,056	1,032,432	268,804	2,239,684	2,508,488	–	2,512,120
Bakersfield	1,225,137	1,506,566	–	2,731,703	2,731,703	–	2,735,658
Palmdale through Los Angeles Union Station	2,681,729	8,069,034	100,648	10,650,115	10,750,764	7,880,129	18,612,326
Orange County: Norwalk through Irvine	2,497,091	1,021,561	137,646	3,381,006	3,518,652	2,726,052	6,237,991
City of Industry through San Diego	5,646,290	13,033,407	347,885	18,331,812	18,679,697	7,966,193	26,638,432

	Total Annual Ridership for Regions
Bay Area	17,144,930
Sacramento/Stockton	9,495,818
San Joaquin Valley	7,487,765
Southern California	51,521,487

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**85,650,000**	**-2.6%**
Revenue	**$2,771,000,000**	**-2.6%**

Table A.36 NA8 – Altamont to San Jose and Oakland (12th Street Station)

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 12th Street	3,150,167	7,629,938	159,695	10,620,410	10,780,105	148,909	10,929,014
Oakland – Airport	155,215	438,634	53,650	540,199	593,848	1,469,598	2,063,446
Union City	411,492	990,273	70,097	1,331,668	1,401,765	362,306	1,764,072
San Jose	616,004	1,575,133	109,039	2,082,099	2,191,138	666,393	2,857,531
Bernal	580,783	1,171,732	133,711	1,618,804	1,752,515	353,094	2,105,609
Sacramento/Stockton	4,628,205	4,464,074	367,126	8,725,154	9,092,280	-	9,092,280
Tracy Downtown	481,186	348,326	429,850	399,663	829,512	-	829,512
Modesto Downtown	1,380,077	274,103	203,547	1,450,633	1,654,180	-	1,654,180
Merced	456,061	225,233	329,006	352,288	681,294	-	681,294
Fresno	1,528,527	1,087,161	278,292	2,337,397	2,615,688	-	2,615,688
Bakersfield	1,296,703	1,628,342	-	2,925,045	2,925,045	-	2,925,045
Palmdale through Los Angeles Union Station	2,788,205	8,461,333	101,600	11,147,939	11,249,538	7,880,129	19,129,667
Orange County: Norwalk through Irvine	2,554,165	1,061,913	155,915	3,460,162	3,616,078	2,726,052	6,342,130
City of Industry through San Diego	5,874,126	13,590,213	393,827	19,070,511	19,464,338	7,966,193	27,430,532

	Total Annual Ridership for Regions
Bay Area	19,719,672
Sacramento/Stockton	9,921,792
San Joaquin Valley	7,876,207
Southern California	52,902,328

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**90,420,000**	**2.9%**
Revenue	**$2,925,000,000**	**2.8%**

Table A.37 NA9 – Altamont to San Jose and Oakland – BNSF Alignment

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,871,720	5,376,366	103,037	7,145,050	7,248,086	1,892,007	9,140,093
Millbrae	126,494	384,723	26,033	485,184	511,216	415,125	926,342
Redwood City	183,621	575,888	45,560	713,949	759,510	378,863	1,138,372
Warm Springs	88,904	124,569	56,891	156,582	213,473	160,662	374,135
San Jose	522,692	1,318,195	89,862	1,751,025	1,840,887	739,045	2,579,931
Bernal	1,109,815	2,391,522	195,379	3,305,959	3,501,337	1,215,779	4,717,116
Sacramento/Stockton	4,238,079	4,322,827	382,314	8,178,591	8,560,906	-	8,560,906
Tracy Downtown	432,887	353,490	372,994	413,383	786,376	-	786,376
Modesto Downtown	1,287,269	268,224	228,526	1,326,967	1,555,493	-	1,555,493
Merced	437,720	219,205	314,482	342,443	656,925	-	656,925
Fresno	1,452,967	1,016,283	264,599	2,204,650	2,469,250	-	2,469,250
Bakersfield	1,205,973	1,483,000	-	2,688,973	2,688,973	-	2,688,973
Palmdale through Los Angeles Union Station	2,639,781	7,942,817	99,074	10,483,524	10,582,597	7,880,129	18,462,726
Orange County: Norwalk through Irvine	2,458,031	1,005,581	135,493	3,328,119	3,463,612	2,726,052	6,189,664
City of Industry through San Diego	5,557,969	12,829,535	342,443	18,045,062	18,387,505	7,966,193	26,353,698

	Total Annual Ridership for Regions
Bay Area	18,875,990
Sacramento/Stockton	9,347,282
San Joaquin Valley	7,370,640
Southern California	51,006,088

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**86,600,000**	**-1.5%**
Revenue	**$2,802,000,000**	**-1.5%**

Altamont plus Pacheco Alternatives

Table A.38 AP1 – Altamont plus Pacheco to San Jose and San Francisco

Network Alternative Name and Description
AP1 – Altamont plus Pacheco to San Jose and San Francisco From San Francisco to San Jose, this network alternative would use the existing Caltrain rail ROW. From San Jose, this network alternative would use the Pacheco and Henry Miller (to the UPRR) alignment alternatives and the UPRR N/S alignment in the Central Valley. From Redwood City, this network alternative would also cross the San Francisco Bay in the Dumbarton Corridor. The Altamont Pass would use the UPRR alignment through downtown Tracy.
AP2 – Altamont plus Pacheco to San Jose and Oakland From Oakland to San Jose, this network alternative would use the Niles/I-880 alignment. From San Jose, this network alternative would use the Pacheco and Henry Miller (to the UPRR) alignment alternatives and the UPRR N/S alignment in the Central Valley. The UPRR alignment through Downtown Tracy would be used for the Altamont Pass.
AP3 – Altamont plus Pacheco to San Jose, Oakland, and San Francisco From Oakland to San Jose, this network alternative would use the Niles/I-880 alignment. From San Francisco to San Jose, this network alternative would use the existing Caltrain ROW. From San Jose, this Network Alternative would use the Pacheco and Henry Miller (to the UPRR) alignment alternatives and the UPRR N/S alignment in the Central Valley. The UPRR alignment through downtown Tracy would be used for the Altamont Pass
AP4 – Altamont_plus Pacheco to San Jose From San Jose, this network alternative would use the Pacheco and Henry Miller (to the UPRR) Alignment alternatives and the UPRR N/S alignment in the Central Valley. The Altamont Pass would use the UPRR alignment through downtown Tracy.

Table A.39 AP1 – Altamont plus Pacheco to San Jose and San Francisco

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	2,159,895	7,078,673	373	9,238,196	9,238,568	2,496,388	11,734,957
Millbrae	150,539	587,809	64,836	673,512	738,348	651,675	1,390,022
Redwood City	183,702	574,767	129,299	629,170	758,469	477,727	1,236,196
Palo Alto	50,863	278,720	17,327	312,256	329,583	946,430	1,276,013
Shinn	269,032	295,488	153,147	411,373	564,520	449,257	1,013,777
San Jose	457,392	2,292,548	189,478	2,560,462	2,749,940	1,691,983	4,441,923
Bernal	559,676	252,823	156,128	656,371	812,499	1,027,519	1,840,018
Morgan Hill	9,316	78,250	1,304	86,262	87,566	344,487	432,053
Gilroy	831,317	622,090	284,682	1,168,724	1,453,407	467,178	1,920,585
Sacramento/Stockton	4,384,813	4,447,972	425,905	8,406,879	8,832,785	–	8,832,785
Tracy Downtown	340,762	46,764	242,762	144,763	387,525	–	387,525
Modesto Downtown	947,574	178,113	190,968	934,719	1,125,687	–	1,125,687
Merced	243,880	91,292	167,493	167,679	335,172	–	335,172
Fresno	1,409,065	1,211,203	139,733	2,480,535	2,620,268	–	2,620,268
Bakersfield	1,344,601	1,628,166	–	2,972,767	2,972,767	–	2,972,767
Palmdale through Los Angeles Union Station	2,888,741	9,028,224	112,904	11,804,061	11,916,965	7,880,129	19,797,094
Orange County: Norwalk through Irvine	2,623,808	1,171,146	153,147	3,641,807	3,794,954	2,726,052	6,521,007
City of Industry through San Diego	6,073,716	14,232,243	396,096	19,909,863	20,305,959	7,966,193	28,272,152

	Total Annual Ridership for Regions
Bay Area	25,285,543
Sacramento/Stockton	9,220,310
San Joaquin Valley	7,053,894
Southern California	54,590,252

	Total Annual Ridership	Percentage Deviation from A1
Total Ridership	**96,150,000**	**15.2%**
Revenue	**$2,992,000,000**	**10.8%**

Table A.40 AP2 – Altamont plus Pacheco to San Jose and Oakland

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
Oakland – 7th Street	2,069,199	6,781,434	357	8,850,276	8,850,633	2,613,390	11,532,705
Oakland – Airport	191,476	747,655	82,467	856,664	939,131	905,771	1,813,706
Union City	237,676	864,809	148,571	953,914	1,102,485	1,576,897	2,611,312
San Jose	462,233	2,316,813	191,483	2,587,563	2,779,046	1,868,491	4,604,936
Bernal	234,675	106,010	65,465	275,219	340,685	470,806	791,465
Morgan Hill	8,165	68,585	1,143	75,607	76,750	329,943	388,472
Gilroy	792,804	593,270	271,494	1,114,580	1,386,074	486,860	1,878,939
Sacramento/Stockton	4,185,635	4,245,925	406,559	8,025,001	8,431,560	–	8,649,439
Tracy Downtown	323,073	44,336	230,161	137,248	367,409	–	376,903
Modesto Downtown	907,266	170,536	182,845	894,957	1,077,802	–	1,105,653
Merced	227,688	85,231	156,372	156,546	312,919	–	321,005
Fresno	1,342,816	1,154,257	133,163	2,363,910	2,497,073	–	2,561,600
Bakersfield	1,305,525	1,580,848	–	2,886,373	2,886,373	–	2,960,959
Palmdale through Los Angeles Union Station	2,759,670	8,624,837	107,859	11,276,648	11,384,508	8,226,296	19,401,265
Orange County: Norwalk through Irvine	2,474,763	1,104,620	144,448	3,434,936	3,579,383	2,809,689	6,309,520
City of Industry through San Diego	5,774,119	13,530,213	376,558	18,927,775	19,304,333	8,275,697	27,572,121

	Total Annual Ridership for Regions
Bay Area	23,726,961
Sacramento/Stockton	8,798,969
San Joaquin Valley	6,774,166
Southern California	53,579,905

	Total Annual Ridership	Percentage Deviation from AP1
Total Ridership	**92,880,000**	**-3.4%**
Revenue	**$3,065,000,000**	**2.4%**

Table A.41 AP3 – Altamont plus Pacheco to San Jose, Oakland, and San Francisco

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Francisco Downtown – Transbay	1,034,837	3,391,496	179	4,426,155	4,426,333	1,226,232	5,652,566
Millbrae	104,982	409,925	45,215	469,692	514,907	465,929	980,836
Palo Alto	181,558	660,619	113,492	728,685	842,177	1,130,141	1,972,318
Oakland – 7th Street	710,594	2,328,845	123	3,039,317	3,039,439	731,173	3,770,613
Oakland – Airport	78,300	305,738	33,723	350,314	384,037	230,471	614,508
Union City	48,933	178,046	30,588	196,391	226,979	332,842	559,821
San Jose	368,106	1,845,029	152,490	2,060,645	2,213,135	1,396,053	3,609,188
Bernal	228,513	103,226	63,746	267,993	331,739	1,368,004	1,699,743
Morgan Hill	8,743	73,444	1,224	80,963	82,187	331,484	413,671
Gilroy	823,937	616,568	282,155	1,158,350	1,440,505	474,713	1,915,219
Sacramento/Stockton	4,014,135	4,071,955	389,901	7,696,189	8,086,090	-	8,086,090
Tracy Downtown	345,379	47,398	246,052	146,725	392,777	-	392,777
Modesto Downtown	365,036	68,615	73,567	360,083	433,650	-	433,650
Merced	212,899	79,695	146,216	146,378	292,594	-	292,594
Fresno	1,264,787	1,087,185	125,425	2,226,547	2,351,972	-	2,351,972
Bakersfield	1,213,371	1,469,260	-	2,682,631	2,682,631	-	2,682,631
Palmdale through Los Angeles Union Station	2,734,397	8,545,850	106,872	11,173,376	11,280,247	7,647,289	18,927,536
Orange County: Norwalk through Irvine	2,460,231	1,098,133	143,599	3,414,765	3,558,365	2,620,591	6,178,956
City of Industry through San Diego	5,818,203	13,633,512	379,432	19,072,283	19,451,715	7,823,597	27,275,312

	Total Annual Ridership for Regions
Bay Area	21,188,482
Sacramento/Stockton	8,478,867
San Joaquin Valley	5,760,847
Southern California	52,381,804

	Total Annual Ridership	Percentage Deviation from AP1
Total Ridership	**87,810,000**	**-8.7%**
Revenue	**$2,897,000,000**	**-3.2%**

Table A.42 AP4 – Altamont plus Pacheco to San Jose

	Business/ Commute	Recreation/ Other	Short Trips	Long Trips	Subtotal Interregional	Intra-regional	Total
San Jose	1,263,214	6,331,506	523,295	7,071,425	4,586,531	7,594,720	12,206,598
Bernal	1,856,625	838,695	517,927	2,177,393	182,093	2,695,319	2,866,516
Morgan Hill	7,106	59,688	995	65,798	257,911	66,793	327,921
Gilroy	427,240	319,712	146,307	600,645	235,661	746,952	982,141
Sacramento/Stockton	5,093,331	5,166,696	494,725	9,765,302	-	10,260,027	10,209,008
Tracy Downtown	317,561	43,580	226,234	134,907	-	361,141	359,346
Modesto Downtown	1,003,219	188,572	202,182	989,608	-	1,191,791	1,185,864
Merced	209,622	85,872	153,595	149,209	-	301,142	299,644
Fresno	1,263,493	1,183,298	125,630	2,320,899	-	2,445,502	2,433,341
Bakersfield	1,347,806	1,786,033	557	3,139,175	-	3,139,732	3,124,119
Palmdale through Los Angeles Union Station	2,972,333	9,418,058	112,364	12,277,594	7,880,129	12,390,264	20,317,213
Orange County: Norwalk through Irvine	2,614,711	1,259,152	150,217	3,723,544	2,726,052	3,874,027	6,618,327
City of Industry through San Diego	6,234,221	14,653,771	382,809	20,504,142	7,966,193	20,888,019	28,859,962

	Total Annual Ridership for Regions
Bay Area	16,365,981
Sacramento/Stockton	10,621,169
San Joaquin Valley	7,078,166
Southern California	55,724,684

	Total Annual Ridership	Percentage Deviation from AP1
Total Ridership	**89,790,000**	**-6.6%**
Revenue	**$2,963,000,000**	**-1.0%**